MacWEEK

GOING PAPERLESS
Imaxis 2.0 document-management system
Also:
- Strata's Vision 3d 4.0
- OptiMem RAM Charger 2.01
- Aladdin Desktop Tools 1.0

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In Reviews

05.15.95 | *The Newsweekly for Macintosh Managers* | VOLUME 9 NUMBER 20

Copland revealed at WWDC

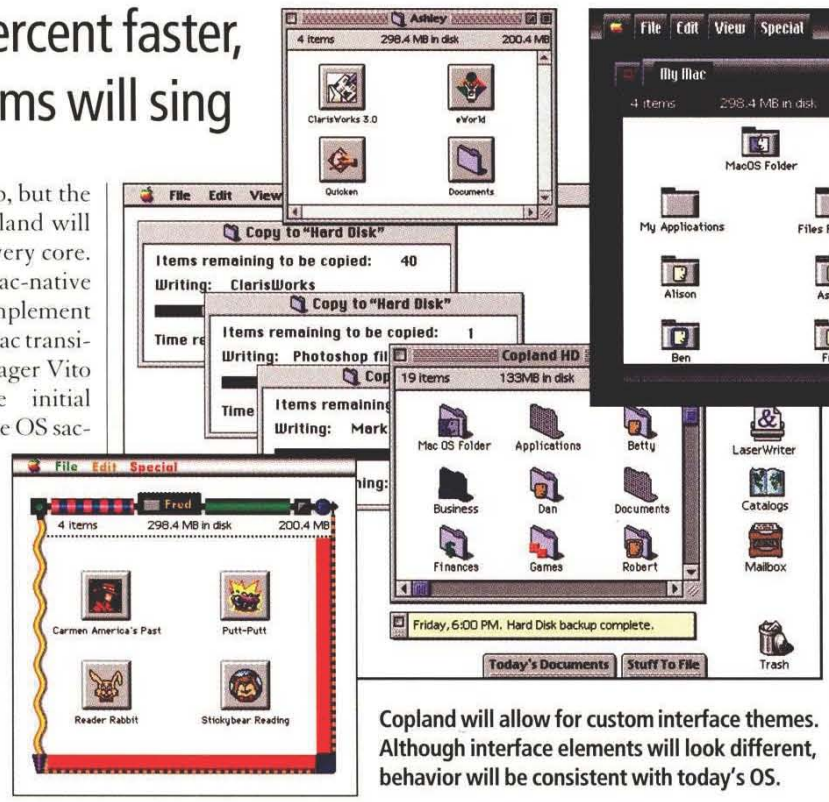
Up to 100 percent faster, I/O subsystems will sing

By Stephen Howard

Beauty is only skin-deep, but the changes coming in Copland will alter the Mac OS to its very core.

Copland's Power Mac-native foundation will implement "Phase 2 of the Power Mac transition," said Product Manager Vito Salvaggio. While the initial Power Mac version of the OS sacrificed performance for compatibility, he said, 1996's major OS update will focus on user efficiency and raw speed. Interface changes will affect the former (see story, right), while new I/O subsystems and a microkernel will address the latter.

See Copland, Page 80



Copland will allow for custom interface themes. Although interface elements will look different, behavior will be consistent with today's OS.

Flexible Finder to play themes

By Robert Hess

At last week's Worldwide Developers Conference in San Jose, Calif., Apple struck up the band for Copland. In its first public showing, the company detailed the considerable changes in store for the Mac OS.

While the underlying architecture of the Copland operating system release promises significant changes (see story, left), Copland's most clearly recognizable difference will be its new user interface. Apple said it expects Copland to act like today's Macintosh but will gain an elastic interface and considerable new functionality.

Copland, which the company said will ship in mid-'96, will give users unprecedented control over what their computing environments look like. From the colors and shapes of windows, menus and buttons to desktop animations, Finder sounds and screen savers, the Mac experience will adapt to match the user's personality.

"At Apple we no longer believe that one Finder interface will fit the needs of all users," said

See Finder, Page 78

Apple, IBM to stare down Visual Basic with Denali

Scripting tool kit built on OpenDoc

By Clifford Colby

Apple and IBM Corp. last week unveiled a Visual Basic-like programming environment based on OpenDoc. The cross-platform tool set, code-named Denali, will be aimed directly at Microsoft Corp.'s popular Windows-based language.

At the Apple Worldwide Developers Conference in San Jose, Calif., Apple and IBM said Denali will create compiled applications as well as new OpenDoc parts. Users will be able to develop and deploy Denali creations on Mac, OS/2, Windows and AIX operating systems. The Mac version will be available "in some form" by this time next year, the partners said.

Denali is intended for a wide range of users, from in-house programmers and value-added resellers to commercial develop-

See Denali, Page 78

NEWSPAPER SECOND CLASS

NEWSMAKER

Nagel foresees 'positive FUD' in Apple's plans

By Mark Hall and Andrew Gore

Freely admitting he's stealing a page from the competition, David Nagel, Apple senior vice president of the new R&D division, told MacWEEK that his company will engage in "positive FUD" to keep customers interested in the platform, attract developers and worry the likes of Microsoft Corp.

Part of this upbeat fear, uncertainty and doubt, or FUD, is Apple's early unveiling of Copland last week at the Apple Worldwide Developers Conference in San Jose, Calif.

Nagel said previewing the next

See Nagel, Page 78

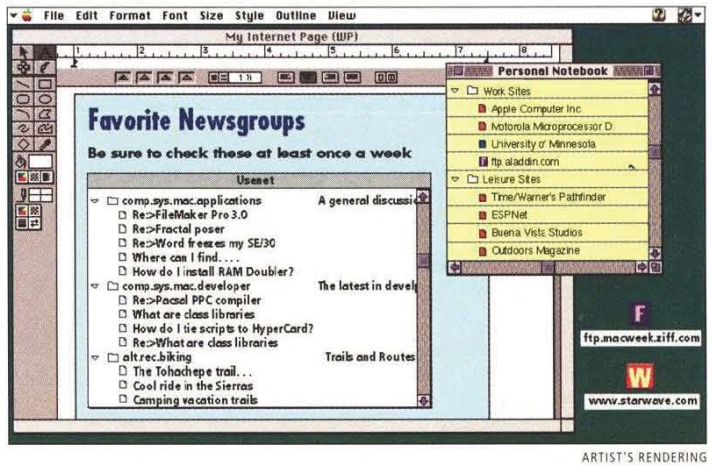
Cyberdog to sink teeth into Internet, OpenDoc

By James Staten

This summer, Apple will unleash Cyberdog, a suite of OpenDoc-based Internet tools. In doing so, the company hopes its component approach to Internet surfing will not only take a bite out of the browser market but also enable new ways of working with Internet-based information.

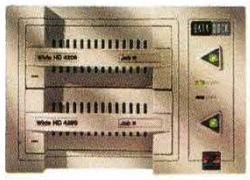
Project Manager Richard Ford said Apple expects to release a collection of Internet parts, code-named Cyberdog, in August with the public beta version of its OpenDoc component-software extension. This prerelease version will be available for download from selected Apple FTP (File Transfer Protocol) sites. Cyberdog is expected to ship

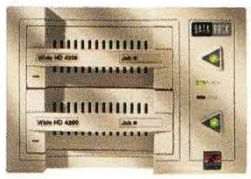
See Cyberdog, Page 80



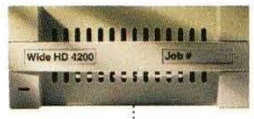
ARTIST'S RENDERING

Multiple DataDock sites provide an infinitely scalable desktop storage solution. Additional sites can be added as your production demands increase.

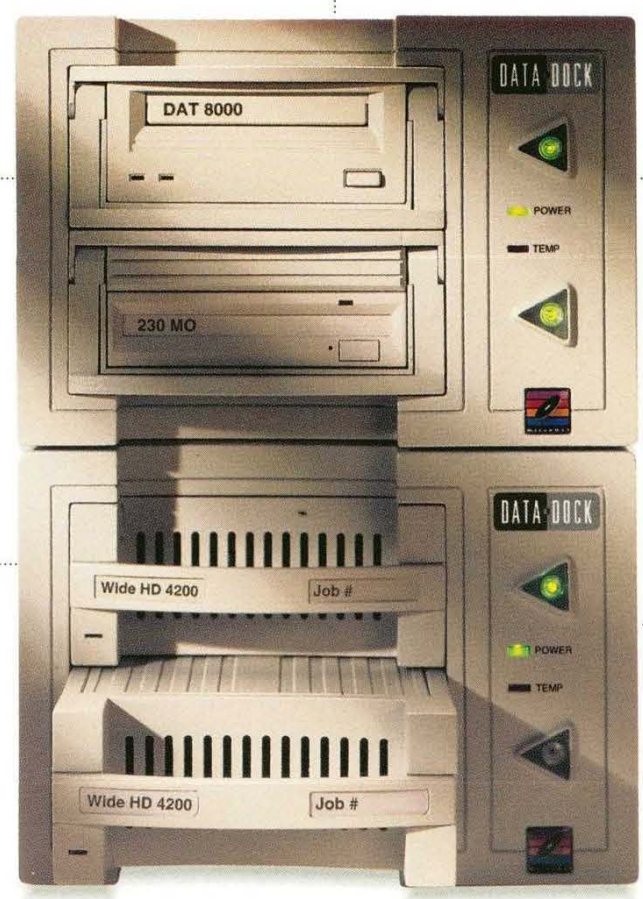


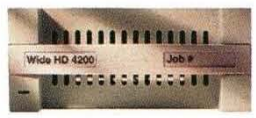


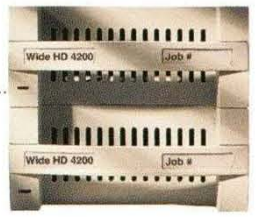
DataDock's intelligent backplane and intuitive software interface provide automatic mounting of drive modules. Dismounting is as convenient as a drag to the trash. Drives are locked in position during operation, spin-up and spin-down to prevent human error.



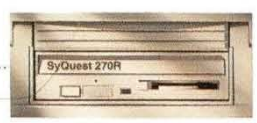
Integrated module and project icon labeling system.







Today's fastest hard drives and Raven Pro drive arrays with 2GB to 8GB capacity can transport entire projects efficiently from work-station to workstation.



DataDock accommodates any combination of MicroNet 3 1/2" hard drives, Raven Pro drive arrays, MO, SyQuest or DAT modules.

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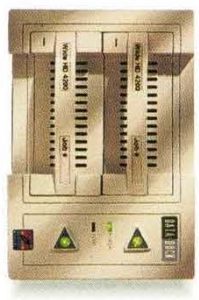

DataDock Desktop (platinum) in vertical orientation

DataDock Desktop (black) in vertical orientation

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MacWEEK

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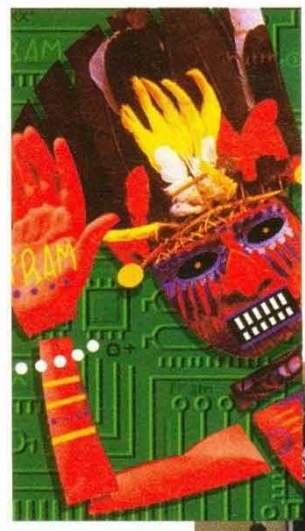
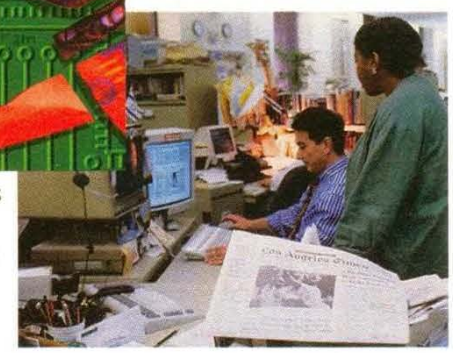


Some mysterious PRAM rites. See MacInTouch, Page 38.

Vision 3d gets update, new name. See Reviews, Page 29.



Paste-up becoming a thing of the past at the L.A. Times. See Problem Solving, Page 40.

PCI-equipped Macs and the capability to rapidly move images through workgroups will create a new market in Fast Ethernet products for pre-press. See GA, Page 10.

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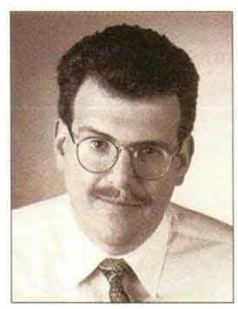
MACWEEK INSIDER ANDREW GORE

Fanfare for common Mac

Sometimes you want something so bad that when it comes time to get it, you almost wish you could put the moment off just a little longer.

That's how I felt walking into the Copland briefing a week ago. I found that I was tense, even a little nervous, over what I was about to see. If Copland turned out to be anything less than scintillating, what would Apple do to differentiate its platform after the arrival of Windows 95?

So into Apple's Crystal Palace briefing room I went, with thoughts of the long-term survival of the Macintosh weighing heavy on my mind. What I saw in that room allayed my fears but also brought with it a frightening contradiction.



With the next version of the Macintosh operating system, Apple is definitely fomenting evolution.

Copland ain't no Mr. Rogers' Neighborhood with a yapping dog running down Main Street with your e-mail rolled up in its digital jaws. It also doesn't generate a pulsing point of light three inches from the screen that responds to changes in your body language.

As interface poetry goes, Copland is haiku — its beauty is in how it interacts with each user, how its meaning can change for each without having to use a different metaphor. Unfortunately, in a world where the prevailing popular choice is a limerick, Apple's haiku OS could prove very hard to sell.

The most promising thing I saw in the Copland demo was that the bits and pieces we've heard rumors about for so long worked well together. The pre-alpha OS fell into the Macsbug debugger only twice — fairly miraculous for the first complete rewrite of the Mac OS in 10 years. The demo was evidence that Apple might really make its self-imposed deadline of mid-1996. And, of course, there's always the fact that the Copland team members' bonuses are based on delivering the OS by next summer.

The demo was also enticing. As a long-time Mac user, I could see that I'd gain immediate benefits by installing Copland. Simple things such as drawers, spring-loaded folders, copying as a background task, the performance of an almost fully native OS, and the beautifully redone Open and Save dialog boxes would be enough to get me to shell out for the upgrade.

Copland will turn personal computing into personalized computing.

It was a relief to see that Copland has enough added functionality to keep Mac loyalists stuck to their platform of choice through the coming Windows barrage. If Apple follows through with plans to make early versions of Copland available to both developers and expert users, those brave souls may get their first chance to play with the future of Macintosh computing as early as Christmas.

The bottom line is this: Copland is still a Macintosh. Regardless of whatever else can be said about the changes in the new OS, users will not need to learn a new interface to reap the OS' benefits.

It's terribly ironic, then, that by maintaining consistency with previous versions of the OS, Apple loses some of that Next Big Thing cachet so long associated with its name.

Certainly the ability to change Copland's appearance will help in the eye-candy-sells-in-30-seconds consumer channel. Everything can be customized: the Finder layout, the look, even Copland's behavior through agents. This new OS will turn personal computing into personalized computing.

However, because advances such as agents and workspaces must be used to be appreciated, demonstrating the power of personalized computing to those all-important new users will be very difficult.

Despite this, I think Apple has taken the right course. Neither the Mac nor Windows is a one-size-fits-all solution. But once Copland ships, the Mac won't have to be. And, over time, this could prove to be a significant advantage. □

Andrew Gore is MacWEEK executive editor/news. He welcomes feedback at andy_gore@macweek.ziff.com.

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Moving ahead on CHRP

Generic platform standards drafted

By David Morgenstern

Looking beyond this summer's flood of PCI Macs, Apple and its PowerPC troika last week took a giant step toward establishing a generic hardware platform.

Apple, IBM Corp. and Motorola Inc. released a white paper covering the Common Hardware Reference Platform (CHRP) and predicted a wider variety of RISC models and lower prices. The companies are also soliciting comments from third-party developers on a draft version of CHRP.

Compliant designs will run PowerPC-native versions of AIX, Macintosh, NetWare, OS/2, Solaris and Windows NT operating systems.

David Nagel, Apple senior vice president, worldwide R&D, said the company expects to steer the Mac line quickly to CHRP and will ship a CHRP-compliant system by the end of 1996.

Although the common platform had been expected to run System 7.5 and current Power Mac applications, Nagel said Apple will concentrate its efforts on bringing its forthcoming Copland OS to the CHRP machines. "The big problem is the cost and qualification — it's really expensive," he said.

The CHRP draft calls for a PowerPC 604 chip; PCI, or Peripheral Component Interconnect, bus; and separate Mac and Intel-standard I/O subsystems. It will let system manufacturers use many industry-standard components and offer vendors a greater range of parts and producers to choose from. Nagel said the reference platform will reduce costs of CPU production and development.

"With components available from 10 people instead of one, you can respond a hell of a lot faster," Nagel said. He added that the new designs will drive changes in Apple's supply operations.

According to the white paper, CHRP designs will extend buyers' price and performance options for new applications and in-house legacy software.

"CHRP is particularly good for the IS guy," Nagel said. Since enterprise managers will not be tied to a particular hardware and OS combination for developmental tools, "it just reduces risk," he said.

Analysts said this summer's introduction of CPUs compatible with IBM's PowerPC Reference Platform (PReP) design will prime the pump for the more inclusive CHRP specification. Available from a number of vendors, the PReP machines will support AIX and Windows NT but not the Mac OS.

"The 100-MHz 604 and Windows NT will help steer MIS and hardware vendors over to the common-platform point of view," said Dominic Ricchetti, director of advanced desktops with San Jose, Calif.-based Dataquest Inc. "It's a shame it's taken [the PowerPC partners] so long with CHRP." □

PowerPC CHRP overview

Processor	PowerPC 604
System RAM	8 Mbytes to 1 Gbyte
Native OS	AIX, Mac OS, NetWare, OS/2, Solaris, Windows NT
ROM	Standard boot ROM, optional slot for Mac ROM
System bus	Peripheral Component Interconnect
System I/O Mac	ADB, GeoPort, LocalTalk, SCSI
System I/O PC	IDE; ISA; parallel; PC keyboard, mouse and floppy; serial; SoundBlaster

Linotype to deliver new high-res flatbed scanner

By Donna Raskin

Linotype-Hell Co. has informed MacWEEK of its plans to polish up the low end of its flatbed scanner line with the Saphir, a new 30-bit-color model aimed at graphics and pre-press professionals. The company showed the scanner behind the scenes at this month's Drupa printing convention in Düsseldorf, Germany.

The company said the Saphir, slated to ship in August for less than $4,000, will compete with Agfa's Arcus and UMAX Technologies Inc.'s PowerLook scanners, which cost $3,495 each.

According to Linotype, the new scanner will be based on the same single-pass CCD (charge-coupled device) engine as the UMAX device. It will capture 10 bits each of RGB data per pixel at an optical resolution of 600 by 1,200 dpi, which can be increased to 2,400 by 2,400 dpi via software interpolation.

The Saphir will include a transparency unit, and it will handle reflective or transparent images measuring up to 8.3 by 11.7 inches and 8.2 by 10 inches, respectively. Linotype said the SCSI-2 device will scan a 608-dpi, full-color image in one minute, 32 seconds.

The new scanner will come with LinoColor Lite, a simplified version of Linotype's color-matching application, which formed the basis for Version 2.0 of ColorSync, Apple's system-level color-management software. LinoColor Lite will be Power Mac-native and work with all ColorSync 2.0-compatible applications. The Saphir will also ship with the complete version of Adobe Photoshop as well as a Photoshop plug-in.

"It's interesting that such a high-end vendor has come so far down-market," said Susan Moyse, industry analyst with BIS Strategic Decisions Inc. of Norwell, Mass. "Linotype-Hell's old world was very proprietary, and end users were finding other products that suited their needs without costing $50,000. Designers don't need a drum scanner to do [for-position-only scanning]."

Linotype-Hell Co. of Hauppauge, N.Y., can be reached at (516) 434-3650 or (800) 842-9721; fax (516) 434-2706. □

Printers widen range of large-format color

By Matthew Rothenberg

Lexmark International Inc. and Epson America Inc. are enhancing their color palettes with large-format revisions to their inkjet printer models.

Lexmark this week is slated to deliver the Color Jetprinter 4079 plus, the successor to the IBM Color Jetprinter PS 4079, which shipped in 1992 when Lexmark was still a division of IBM Corp.

The new model costs $3,199, the same as its predecessor, and is based on the same 360-by-360-dpi, tabloid-size Canon engine. However, the Color Jetprinter 4079 plus offers a number of enhancements in speed and image quality, Lexmark said.

The new printer can output a CMYK image in one minute, compared with one minute, 26 seconds with the earlier model. Lexmark attributed the speed improvements to the printer's 25-MHz AMD 29030 RISC chip and a faster print head. The device also features a new high-speed bidirectional parallel port as well as LocalTalk. Users can also buy a variety of multiprotocol external network adapters.

The Color Jetprinter 4079 plus includes a Level 2 version of Lexmark's own PostScript emulation; the earlier model was a Level 1 device. It also comes with 4 Mbytes of RAM, which can be extended to 36 Mbytes.

Epson recently announced plans to extend the capabilities of its Stylus printer line with the Stylus Pro XL, a new color inkjet that will offer full-bleed tabloid-size output.

The printer, which will ship in August for a street price of less than $2,000, will output pages measuring up to 13 by 19 inches at a maximum resolution of 720 by 720 dpi. It will ship with Mac and Windows drivers as well as serial and parallel interfaces. LocalTalk and Ethernet interfaces and a software-based PostScript Level 2 RIP will be optional, Epson said.

Lexmark International Inc. of Lexington, Ky., can be reached at (606) 232-2000 or (800) 891-0331; fax-back (606) 232-2380.

Epson America Inc. of Torrance, Calif., can be reached at (310) 782-0770 or (800) 289-3776, Ext. 3000; fax-back (310) 782-4214. □

Based on the same engine as the original Apple Color Printer, the Color Jetprinter 4079 plus adds Level 2 emulation and a faster processor to the color inkjet.

Clone workstation for developers

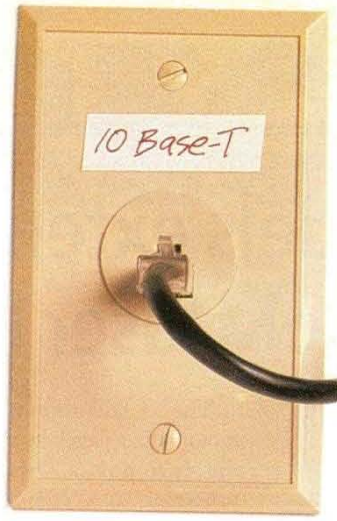
Power Computing Corp. and Metrowerks Inc. last week announced plans to offer Mac-clone workstations focused on developers.

Based on Power Computing's recently shipped Macintosh clones (see MacWEEK, April 17, Page 1), the CodeStation will be available this fall with Metrowerk's CodeWarrior development environment.

The workstation will allow programmers to create applications for 680x0 Macs and Power Macs, Windows NT and Windows 95 machines, and personal communicators running the Magic Cap operating system.

Power Computing will build the CodeStations and Metrowerks will sell them. Several configurations will be available, according to the companies.

Metrowerks Inc. of St. Laurent, Quebec, can be reached at (514) 747-5999; fax (514) 747-2822; support@metrowerks.com. □



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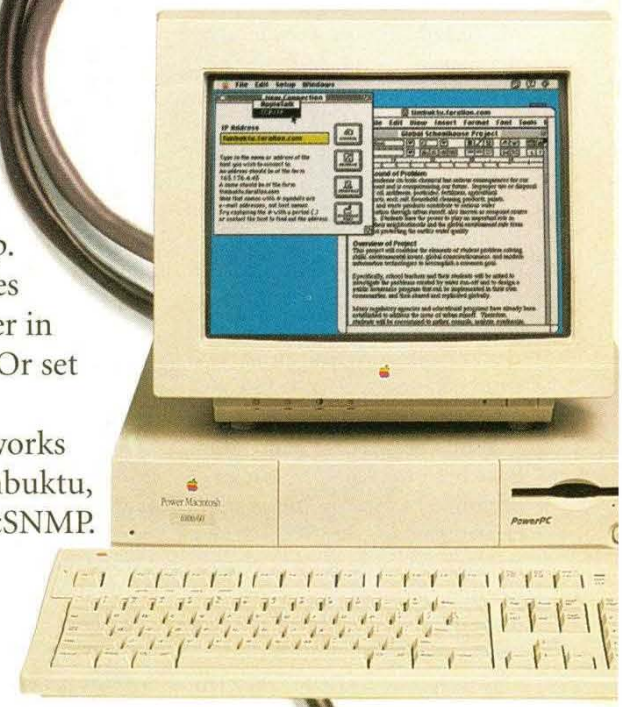
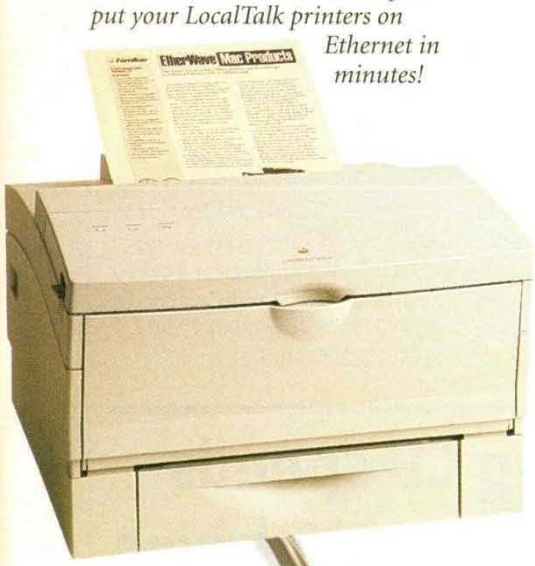


EtherWave Printer Adapter and EtherWave MultiPrinter Adapter—put your LocalTalk printers on Ethernet in minutes!



Farallon's EtherWave® has forever changed the way people think of 10Base-T networking. Full Ethernet speed with PhoneNET simplicity. Finally, 10Base-T is literally a snap.

Thanks to EtherWave, you can "daisy-chain" several devices from any 10Base-T hub port or wall jack. Add a Mac or printer in minutes. Connect a PowerBook without working up a sweat. Or set up a small, fast network of up to 8 devices *without a hub.*

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Emissions rules revised

By James Staten

A new, stricter electromagnetic emissions standard developed in Sweden is finding its way into domestic monitors.

ViewSonic Corp. of Walnut, Calif., this month became the first U.S. company to adopt the TCO'92 standard for its high-end line of displays (see MacWEEK, May 8, Page 7). Nokia of Helsinki, Finland, and Nanao Corp. of Matto, Japan, make several models distributed in the United States that comply with the TCO'92 standard. Nanao said it expects to support the standard throughout its entire line by year-end.

The Swedish Confederation of Professional Employees (TCO) determined in 1992 that the MPR II standard, which has gained acceptance internationally, offered workers insufficient protection from potentially harmful electromagnetic rays.

While no decisive conclusions have been made on the effects of prolonged exposure to low-level electromagnetic emissions, some scientists in the United States and Europe contend the emissions may be linked to birth defects, cancer and Alzheimer's disease.

In response to these concerns, the workers' union introduced TCO'92, a stricter standard aimed at bringing field-emission levels down as far as technically possible (see chart above). The standard is especially stringent on emissions from the front of a display, measuring them from a distance of 30 cm (about 12 inches) vs. 50 cm (about 20 inches) in the MPR II standard.

Besides limiting emissions, TCO'92 also incorporates energy-consumption parameters that are stricter than the Environmental Protection Agency's Energy Star standard. TCO'92-compliant displays must power down to 15 watts, while the U.S. regulation specifies 30 watts.

The TCO'92 standard has been widely accepted in Europe, but U.S. manufacturers have been slower to respond. Several display vendors attributed their reluctance to adopt TCO'92 to high costs and lack of user demand.

ViewSonic, however, said many companies will want to head off lawsuits alleging harm from workplace emissions. "There are liability issues to deal with here," said Mark Gersh, ViewSonic product marketing manager. "Even though we don't yet have conclusive evidence, companies want to provide the safest environment they can for their workers."

Yet monitor emissions are only a part of the overall problem. A range of products emit electrical fields, including electric blankets, heaters, microwave ovens and power lines. Furthermore, the computerized workplace poses other health risks, such as repetitive stress injuries and eyestrain.

To combat some of these problems, the Swedish union in March announced TCO'95, a new standard merging the emissions requirements from TCO'92 with new rules on screen flicker, brilliance, linearity and luminance. It also includes requirements for keyboard manufacturers, setting limits on the pressure needed to depress a key, inclination of the board and electrostatic discharge. U.S. Mac-compatible monitors already meet the flicker standard, but full compliance with the rest of the standard is not expected for several years. □

A stricter standard

Electrical fields		
FREQUENCY RANGE	TCO	MPR II
0 Hz (static field)	±500 volts	±500 volts
5 Hz-2 kHz	≤10 volts per meter	≤25 volts per meter
2 kHz-400 kHz	≤1 volt per meter	≤2.5 volts per meter
Magnetic fields		
FREQUENCY RANGE	TCO	MPR II
5 Hz-2 kHz	≤200 nanoteslas	≤250 nanoteslas
2 kHz-400 kHz	≤25 nanoteslas	≤25 nanoteslas
Energy consumption		
IDLE POWER LEVELS	TCO	ENERGY STAR
Monitors power down to	≤30 watts then ≤8 watts or ≤15 watts	≤30 watts

TCO standards are measured from 30 cm in front of the screen and 50 cm around the display. MPR II standards are measured from 50 cm in all directions. Field strength diminishes significantly with distance.

Portrait enlarges Pivot

By James Staten

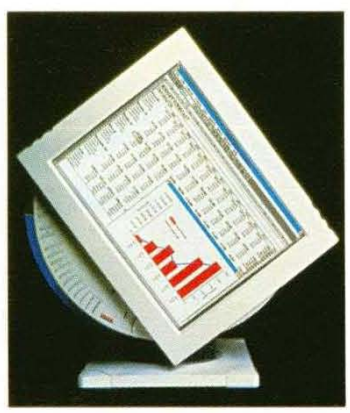
Radius Inc.'s Pivot display technology now belongs to Portrait Display Labs Inc., which is preparing to deliver a larger model.

The Pivot 1700, priced at $895 and expected to ship in June, is a 17-inch display that can be turned on end and used in portrait or landscape mode. When rotated, the display reorients the on-screen image, repositions all icons and allows the user to see a full legal-size page. Users do not have to restart their Macs or close any applications to reorient the display; it comes with the necessary software drivers to reconfigure the screen.

The Pivot 1700 is built around a Hitachi tube that has a 0.26mm dot pitch and a maximum resolution of 1,024 by 768 pixels at 75 Hz. It is compliant with the Energy Star standard for energy consumption and the MPR II standard for electromagnetic emissions and is covered by a three-year warranty.

The Pivot 1700 Professional, due in October for $1,295, will resemble the Pivot 1700 but will support resolutions up to 1,280 by 1,024 pixels at 76 Hz.

Portrait Display Labs Inc. of Pleasanton, Calif., is at (510) 227-2700 or (800) 858-7744; fax (510) 227-2705; jmjpdl@surfnet.com. □



The Pivot 1700 can be turned on end and used in portrait mode.

Elite models extend GCC tabloid laser line

XL408, XL1208 offer full bleed

By Matthew Rothenberg

GCC Technologies Inc. last week extended the scope of its Elite XL line of full-bleed tabloid-size laser printers with two new models.

Both the $1,999 Elite XL408 and $3,999 Elite XL1208 are based on Fuji Xerox engines that print eight letter-size or four tabloid-size pages per minute.

The XL408 outputs 600 and 400 dpi, respectively, at letter and tabloid size, and users can print 600-dpi tabloid-size sheets by expanding the printer's RAM from 4 Mbytes to 6 Mbytes. It features a 16.7-MHz AMD RISC chip and the Level 2 version of Phoenix Technologies Ltd.'s PhoenixPage PostScript interpreter. The XL408 comes with one 250-sheet paper tray; a $199 250-sheet feeder is optional.

The XL1208 outputs letter- and tabloid-size pages at up to 1,200 dpi. It runs on a 25-MHz AMD processor and comes with 24 Mbytes of RAM. Besides PhoenixPage, it includes HP PCL 5 and HP-GL/2 emulations. The XL1208 also features AccuGray, a proprietary gray-scale halftoning algorithm. The XL1208 includes two 250-sheet paper trays.

Both models ship with LocalTalk and Centronics parallel interfaces and a SCSI port. The XL1208 also includes an Ethernet card, which is optional for owners of the XL408; TCP/IP and IPX are optional on both printers. Letter-size 500-sheet feeders are available for both models.

GCC also announced that it has cut the price of its XL608 to $2,399 and XL808 to $2,999 from $2,599 and $3,799, respectively.

GCC Technologies Inc. of Bedford, Mass., can be reached at (617) 275-5800 or (800) 422-7777; fax (617) 275-1115. □

NEC stirs up CD speeds with MultiSpin 6X drives

By David Morgenstern

Punching up CD-ROM performance, NEC Technologies Inc. last week released a sextuple-speed player.

External and internal versions of the MultiSpin 6X carry street prices of about $599 and $499, respectively, according to NEC.

NEC said the SCSI-2 device has a 256-Kbyte RAM cache, and it offers an average data transfer rate of 900 Kbytes per second and an average access time of 145 milliseconds.

It supports multisession Mac Hierarchical File System, CD-ROM XA, Digital Audio, CD-Plus, VideoCD and CD-I formats.

The caddy-feed drive is similar in design to NEC's quadruple-speed MultiSpin model. The unit's front panel has a backlit LCD display and audio controls.

The external drive comes with Casa Blanca Works Inc.'s Drive CD software; the internal version ships without drivers.

"Six-speed CD-ROM is not a mainstream product until 1996," said Patty Chang, an analyst with San Jose, Calif.-based Dataquest Inc. She said the sextuple-speed CD-ROM players will face competition from CD-Erasable mechanisms that are expected to ship in the first half of 1996 (see MacWEEK, May 1, Page 8).

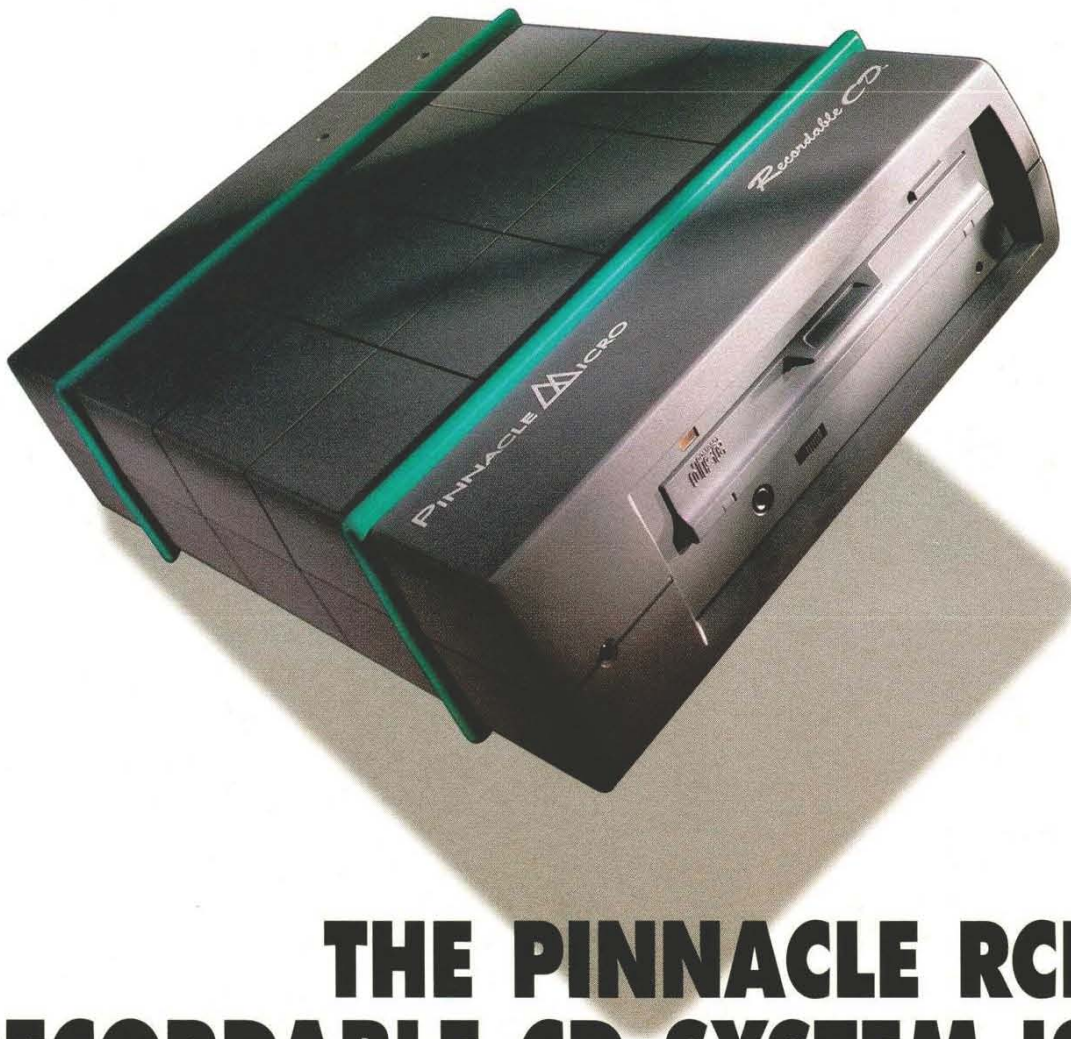
NEC Technologies Inc. of Wood Dale, Ill., can be reached at (708) 860-9500; fax-back (708) 238-7800 or (800) 366-0476. □

For the record

Contrary to information provided by MacVONK Inc. for a May 1 article (Page 8), a 120-user limit on simultaneous TeamAgenda users applies only when AppleTalk is used exclusively or when IPX is unavailable.

The May 1 MacWEEK index (Page 24) omitted some companies that develop Mac products from the BusinessWeek list of the 1,000 most valuable U.S. companies. Microsoft Corp. was 11th with an estimated market value of $36.6 billion, Hewlett-Packard Co. was 23rd with $29.3 billion, and Oracle Corp. was 62nd with $13.5 billion.

RECORDABLE CD @ COMPUSA



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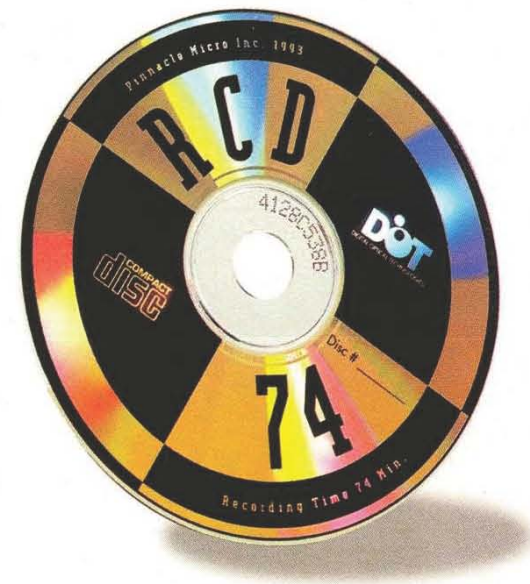

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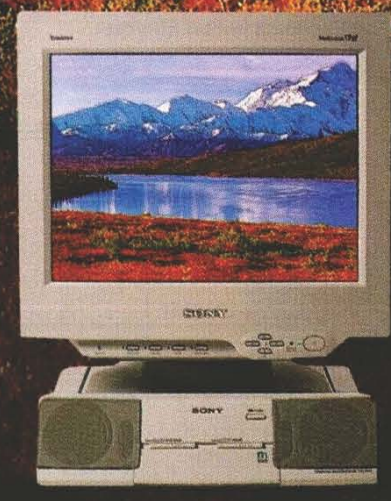

REALITY?

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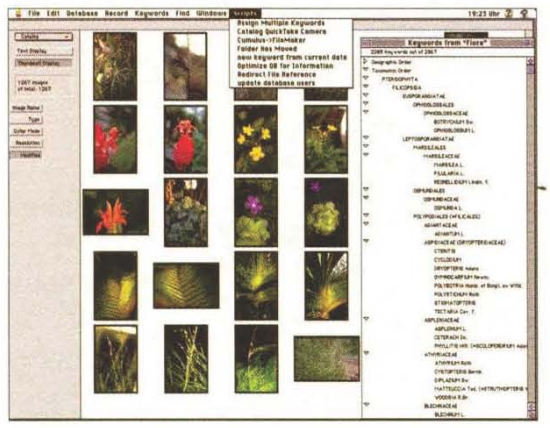
Cumulus to get scripting

By Carolyn Said

New horizons are opening up for Cumulus, the multimedia cataloging program from Canto Software Inc. Cumulus 2.5, shown in sneak peeks at the Drupa printing trade show in Düsseldorf, Germany, this month, will add scripting, a folder-watching feature and a free browser.



Cumulus 2.5 will come with a sample image database of 1,200 low-resolution flower photos with keywords showing scientific classifications and geographic locations.

Due by July, the upgrade will support Apple-events scripting and include a script editor. A Record option will allow users to create scripts simply by performing actions within the application.

Canto will ship the program with about 30 scripts, including one to assign multiple keywords to multiple records; one to optimize the program for maximum security; and one to integrate Cumulus with other programs, such as QuarkXPress and Claris Corp.'s FileMaker Pro. The company said it will continue to offer more scripts free on-line in response to customer requests.

Canto has developed a folder-watching program called Vento, which it will include in Cumulus 2.5 and also possibly ship as a separate product. Users can set Vento to watch for changes made within folders and then update the Cumulus database as appropriate. For example, if an image in a watched folder is modified, the program will automatically place the edited image in Cumulus.

Cumulus 2.5 will come with a royalty-free browser; Canto said it is talking to stock photo companies about bundling its browser.

According to the company, the upgrade will increase the speed of keyword handling tenfold. It will also include a link to Adobe Illustrator and support for the QuickDraw 3D metafile format.

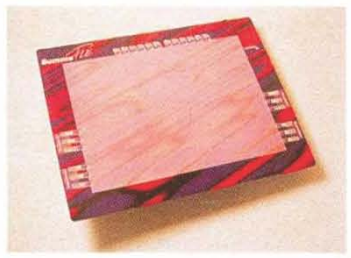
Cumulus now sells for $1,495 for a five-user package. Pricing and upgrade costs for Version 2.5 have not been set.

Canto Software Inc. of San Francisco can be reached at (415) 905-0300 or (800) 332-2686; fax (415) 905-0315; canto@applelink.apple.com. □

Graphics tablets give users elbow room

By Cate C. Corcoran

Summagraphics Inc. last week shipped two graphics tablets designed to conserve the desk space of artists and designers.



SummaFlex is an 18-by-24-inch flexible graphics tablet that can be rolled out onto a desktop.

SummaFlex, priced at $849, is a flexible tablet that can be rolled up for storage. It supports a total active area of 18 by 24 inches, which users can reduce. The tablet's surface includes function keys that users can customize. Its cordless pen features three programmable buttons and detects 256 levels of pressure. SummaFlex is covered by a five-year warranty.

Summa Expression is the company's small-format tablet, featuring a 6-by-8-inch active area. The $389 tablet ships with a three-button, pressure-sensitive pen that picks up 256 levels of pressure. The tablet carries a lifetime limited warranty.

Both tablets ship with SummaSoft driver software for the Macintosh, which lets users scale both their screens and tablets for customizable drawing areas.

Summagraphics Corp. of Austin, Texas, can be reached at (512) 835-0900 or (800) 444-3425; fax (512) 873-1329; sales@summagraphics.com. □

OSC's Deck II to plug in

By Cate C. Corcoran

Macintosh musicians attempting to create more-complex compositions can look to a forthcoming upgrade of OSC's Deck II digital audio recording application.

Slated to ship in July, Deck II 2.5 will break through previous limits on the number of playback tracks and open up to third-party add-on tools.

Currently at Version 2.2, Deck II is a $399 sound-editing and sound-recording software package for Power Mac, Quadra 840AV and 600AV, Centris 660AV, and PowerBook 500 machines. With an interface that simulates a mixing board, the program lets users record up to 999 working tracks and save finished material in

See Deck II, Page 12

Version 2.5 of OSC's Deck II sound-editing software will include real-time, in-line effects such as delay and EQ, letting users apply effects in software without any additional hardware.

FOCUS ON

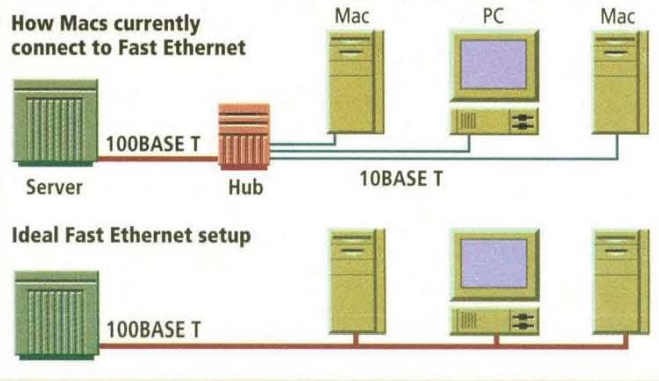
PUBLISHING

Fast Ethernet speeds pre-press

By Steve Hannaford

This summer the PCI-equipped Macintoshes will bring less-expensive, faster video accelerators to graphics users. Apple last week announced that a multiprocessing Mac OS will boost graphics tasks using a multiple-CPU card that will fit into several of those same PCI computers. But when it comes to moving images within a workgroup, desktop advances have done nothing to improve network throughput.

Boosting throughput



Products that finally beat the 10-Mbps LAN speed limit will be among the most important developments in the pre-press world this year. The adoption of the faster and relatively inexpensive 100BASE T Ethernet, more commonly called Fast Ethernet, promises to increase bandwidth significantly and change the way pre-press shops work.

According to Michelle Robidoux, creative technologies manager at Bronner Slosberg Humphrey, a Boston-based ad agency, "In the last few years, the speed of the hardware and software we do our work on has accelerated dramatically, but things slow down as soon as we get on the network."

The Fast Ethernet architecture allows for sustainable transfer rates ranging from 20 to 60

See Focus On, Page 12

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QuickMail continues to win awards and receive high ratings. Like four "diamonds" from MacWEEK. Or the readers of Macworld selecting it as the best E-mail system in 1994. But the true measure of success is the millions of satisfied customers, like Sullivan Middle School, who depend on QuickMail every day.

With more than one hundred classrooms, and nearly 1,000 students, Sullivan Middle School in Worcester, MA., wanted to create an efficient, paperless environment using state-of-the-art technology to streamline processes, reduce overhead, and improve communications.

To accomplish this, Sullivan Middle School turned to QuickMail. *"I tested a lot of E-mail packages and we chose QuickMail because it is user-friendly and extremely reliable,"* states Kathleen Peloquin, technology facilitator at the school.

With more than 300 computers on the network, Sullivan Middle School has computers in every classroom. Messages are sent throughout the building, eliminating frequent and frantic searches for information on students and activities. Paper-based business processes have been automated using QuickMail electronic forms and an SMTP gateway connects everyone to the Internet. *"QuickMail does the one thing we really need to do… save time, energy, and money," notes Peloquin.*

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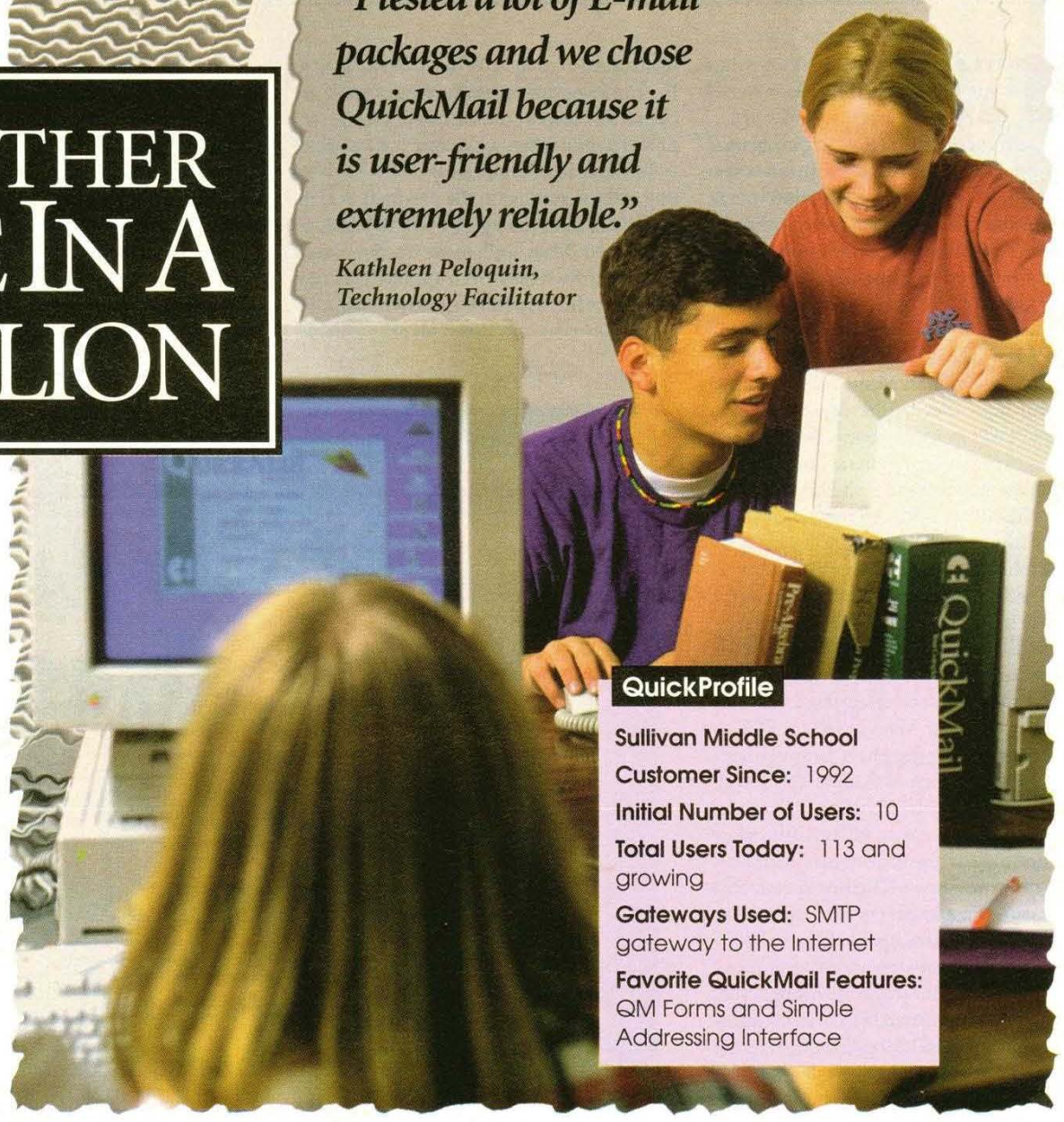
"I tested a lot of E-mail packages and we chose QuickMail because it is user-friendly and extremely reliable."

Kathleen Peloquin, Technology Facilitator



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FOCUS ON

From Page 10

Mbps, several times faster than the optimal rate on current 10BASE T Ethernet systems. Since typical high-resolution image files are about 20 to 50 Mbytes, Fast Ethernet offers a difference of minutes in opening, sending and printing files.

For years, people have tried to find alternatives to Ethernet when moving large files. The "sneakernet" method is still enormously popular. Multi-user SCSI setups and high-speed fiber-optic networks are also used in some shops, but they are still too expensive for general adoption.

But potential users of Fast Ethernet say it offers a balance of price and convenience. Offerings from Farallon Computing Inc., Asanté Technologies Inc., Dayna Communications Inc. and Apple are due to ship in the next few months at about $500 per station.

Fast Ethernet is already running on Intel-standard PCs. But it will have a major impact on the Mac platform only with the release of Macs based on PCI, or Peripheral Component Interconnect. While vendors such as Asanté and Farallon will probably offer NuBus cards, most experts expect these to offer little more than double current throughput rates because of limitations in NuBus speed. PCI Macs using Fast Ethernet are expected to show speed increases up to a factor of 10.

Meanwhile, some sites are making use of Fast Ethernet in a limited way through hubs that offer the high-speed LAN in conjunction with switched 10-Mbps Ethernet. In this configuration, companies run a 100BASE T link between a PC server and a hub, then run 10BASE T Ethernet lines to the individual Mac and PC workstations.

At Indianapolis color trade shop Ropkey Graphics, General Manager Lauren Kuczka is prepared for the transition. "We've been waiting to implement Fast Ethernet," she said. "We have wire in the walls ready to go. With a new Indigo E-print in our plant, throughput speeds are even more important. But we'll go one section at a time when we're sure it all works."

Bronner Slosberg Humphrey is ready to upgrade everything in the production area, Robidoux said; the agency will bring in 40 PCI-based Macs and move from mixed-speed FastSwitches from Grand Junction Networks Inc. to a full Fast Ethernet implementation as soon as the cards are available.

Once PCI Macs are widely available, experts expect pent-up demand will lead to rapid growth in Fast Ethernet. Ray Leach, president of Publishing Solutions Inc., an Akron, Ohio-based graphic arts consulting and systems support company, is gearing up for installations scheduled for later this year.

"We expect to implement fast Ethernet at dozens of our client sites, with over a half million [dollars] worth of equipment and labor involved," Leach said. Software RIPs will have an advantage over older hardware RIPs, Leach said, since the latter will be difficult to adapt to the new networking scheme.

A quick adoption of Fast Ethernet by Mac graphics users would also have a visible effect on the rest of the market, observers added. As the volume of cards purchased by graphics professionals increases, the prices for Fast Ethernet cards should drop, bringing this fast, new networking technology within reach of mainstream Mac users. □

Deck II

From Page 10

Sound Designer II, AIFF (Audio Interchange File Format), QuickTime, .WAV and Apple Sound Resource file formats.

The upgrade will let users output as many tracks as their systems will accommodate. OSC said that Power Mac 8100s will be able to output up to 24 simultaneous playback tracks, an improvement over the 16-track maximum in the previous version.

Built-in real-time effects, including EQ and delay, will let users apply processing to tracks in software as they are recorded or played back. Also new will be compatibility with Adobe Premiere plug-ins. Third-party signal-processing software created for use with Premiere will work with Deck II 2.5 without any additional hardware.

The company said Deck II 2.5 will feature faster screen redraws on the Power Mac and additional keyboard shortcuts for editing commands.

Upgrade pricing has not been set.

OSC of San Francisco can be reached at (415) 252-0460 or (800) 343-3325; fax (415) 252-0560; osc@applelink.apple.com. □

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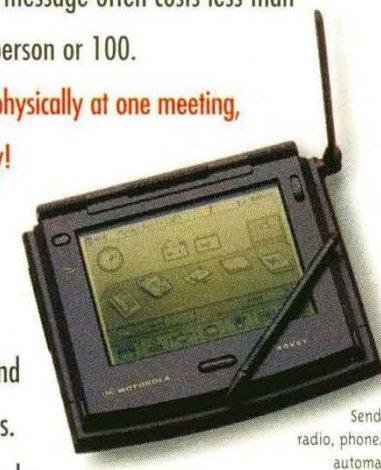

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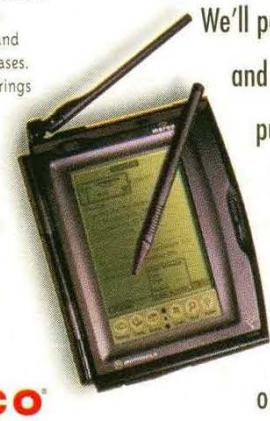

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MOTOROLA

1-800

Displays hit the big time

By James Staten

If 21 inches simply isn't enough screen real estate, users can now turn to Barco Inc. and Mitsubishi Electronics America Inc., which last month shipped 29- and 37-inch displays, respectively.

Unlike many other oversize monitors, Barco's 29-inch MegaCalibrator, priced at $24,999, is meant to be a desktop publishing and video-editing unit, not a presentation display. Its Matsushita tube has a dot pitch of 0.37mm and a maximum Mac resolution of 1,600 by 1,200 pixels at 72 Hz. Its maximum RGB resolution displays more than twice the viewing space of a standard 21-inch monitor, the company said.

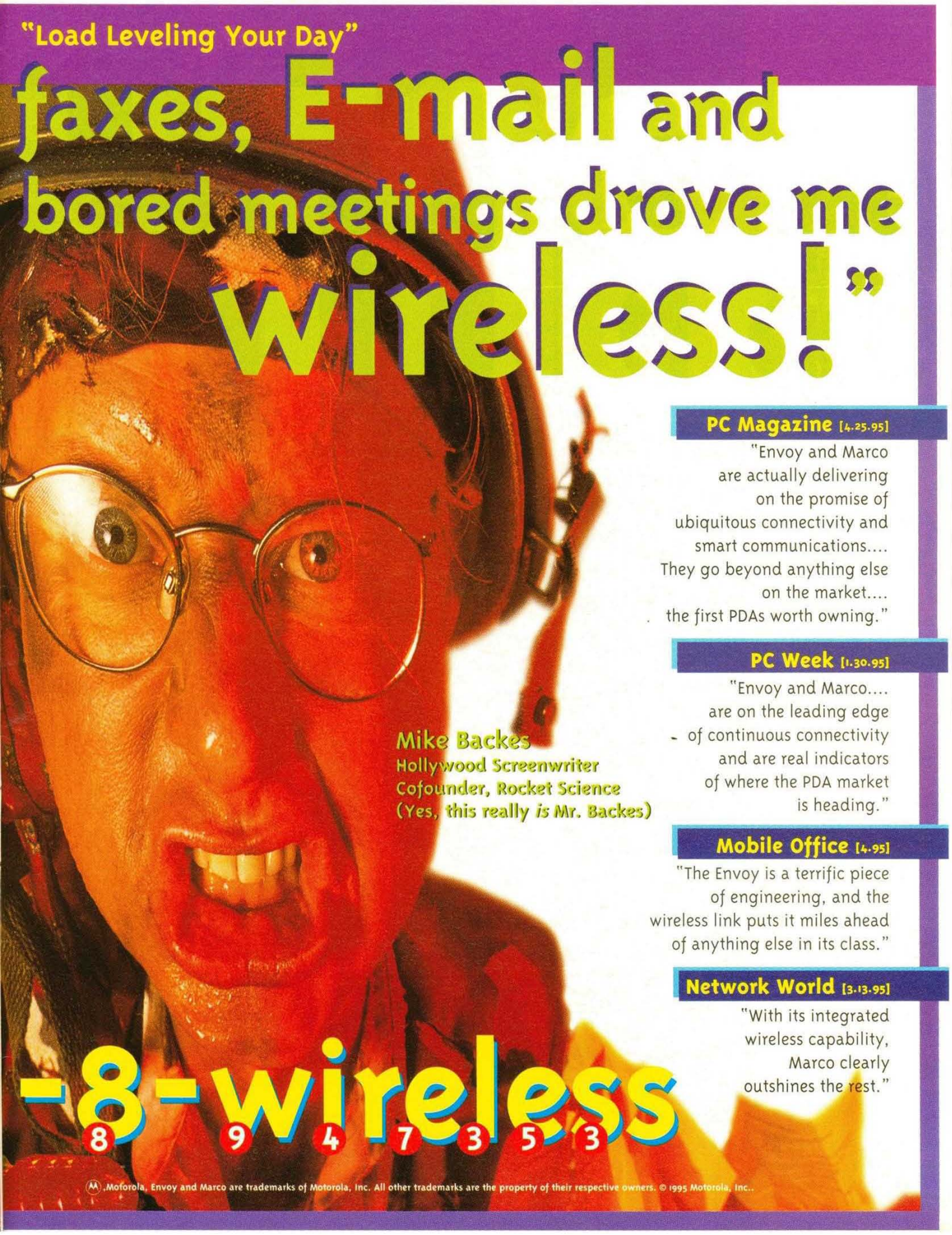
For accurate color, the monitor's digital controls generate their own test patterns, store all image adjustments in the display rather than on the graphics board, and communicate with the Mac through both video and serial ports. Color-calibration software and a colorimeter are provided, and the display routinely performs luminance uniformity and purity tests to guarantee consistent white, gray and color values over the entire surface of the screen.

Mitsubishi's MegaView 37 may be more suitable for multimedia presentations. It can support up to four simultaneously connected video sources, has two built-in 5-watt stereo speakers and supports audio-out.

The $7,495 display is based on a Mitsubishi tube with a 35-inch viewing area, an Invar shadow mask, 0.85mm dot pitch and a maximum Mac resolution of 640 by 480 pixels at 66.7 Hz. The tube features the company's Dynamic Beam Focusing technology, which Mitsubishi said reduces image distortion by correcting pixel shape across the tube.

Barco Inc. of Kennesaw, Ga., can be reached at (404) 590-7900; fax (404) 590-8836.

Mitsubishi Electronics America Inc. of Cypress, Calif., can be reached at (714) 220-2500 or (800) 843-2515; fax (714) 229-3854. □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PC Magazine [4.25.95]
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Meta app manages graphic arts jobs

By Donna Raskin

Creative, Mac-based businesses often need creative, Mac-based solutions to consolidate job tracking, costing and invoicing. To that end, Meta Communications Inc. has released Job Manager, a package that customizes invoices and establishes a networked time- and materials-management system for graphic arts businesses.

The $1,995 program includes Job Manager SQL Server, the database on which all the information is stored; Job Administrator software, which sets up information such as departments and cost centers; and Job Manager Forms Tool, which creates invoices, job acknowledgments and customer records. The company recommends running the SQL Server on a dedicated machine.

The Job Manager software includes a Workflow Editor that allows companies to assemble templates for forms that follow jobs through typesetting, illustration/graphics, electronic stripping and other processes. All information stored with Job Manager can be exported as text files.

The basic package includes three licenses for the Job Manager client software, which offers access to all modules. Additional client licenses for one, three, five or 10 users cost $499, $1,349, $2,020 and $3,599, respectively.

Meta Communications Inc. of Iowa City, Iowa, can be reached at (319) 337-8599 or (800) 771-6382; fax (319) 337-3635. □

The Job Status window tracks a project's progress through the production process.

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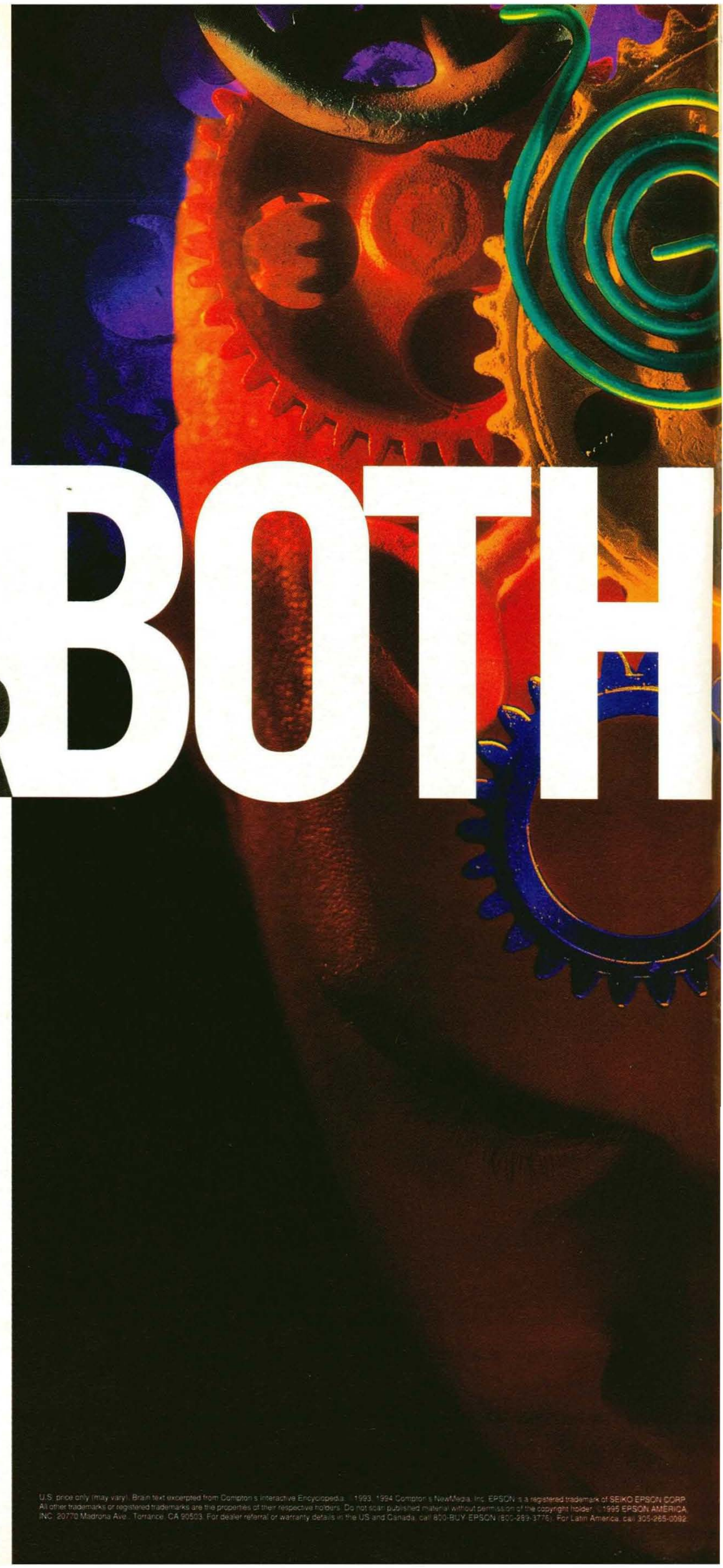

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develop simple, meaningful theories about how it works. There is experimental data to support the view that the brain is divided into specialized areas--areas that control vision, touch, movement, and so on. On the other hand, there is also evidence to indicate that the brain at all times functions as a whole and that one region can perform several tasks and so can compensate for the loss or damage of another region. The apparent contradiction has not been resolved. By studying the results of injury to particular parts of the brain, neuroscientists have been able to construct sophisticated brain maps showing where in the brain the controls of certain functions are localized. For instance, because destruction of the occipital lobes results in total blindness, neuroscientists know that the occipital lobes are crucial for vision. However, such an observation does not preclude the possibility that other parts of the brain also contribute to aspects of vision, such as identifying what is being seen. Since the brain uses bioelectric as well as chemical means to relay information, scientists can study the brain by analyzing its electrical activity, or brain waves. This is done using a device called an electroencephalograph (EEG), which generates line graphs made up of characteristic wave

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based on applications of new technologies, such as position emission tomography, or PET scans, which can provide color-coded maps showing which parts of the brain are used during the performance of different tasks. A relatively new field, neuropsychology, tries to correlate psychology and behavior with brain anatomy and physiology. Related research efforts are aimed at discovering the biochemical basis of mental illness. Impressed with the similarities between computers and brains, some neuroscientists are collaborating with linguists and psychologists in order to understand how computers and brains are similar and how they differ. Although the brain has some elements in common with a computer, the brain can accomplish far more than can any computer because the brain's organization is far more complex. However, such an observation does not preclude the possibility that other parts of the brain also contribute to aspects of vision, such as identifying what is being seen. Since the brain uses bioelectric as well as chemical means to relay information, scientists can study the brain by analyzing its electrical activity, or brain waves. This is done using a device called an electroencephalograph (EEG), which generates line graphs made up of characteristic wave patterns. These patterns can reveal a person's state of mind and the brain's state of health and can help scientists study how the brain works. Because its effectiveness as a research tool is limited, it records only a

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EYEING VISIGENIC

Apple last week announced it will license Visigenic Inc.'s Open Database Connectivity 2.1 driver manager.

Artisoft ready to add AppleTalk to Win 95

New LANtastic eschews gateway

By Nathalie Welch

When Artisoft Inc. delivers the next version of its LANtastic peer-to-peer networking software, Macintosh users will gain direct connections to its resources — just like their Windows 95 counterparts.

Currently called LANtastic for Windows 95, the package is designed to enhance the network technologies built into Microsoft Corp.'s upcoming operating system update; it will include the AppleTalk protocol and interoperate directly with Mac clients, Artisoft said.

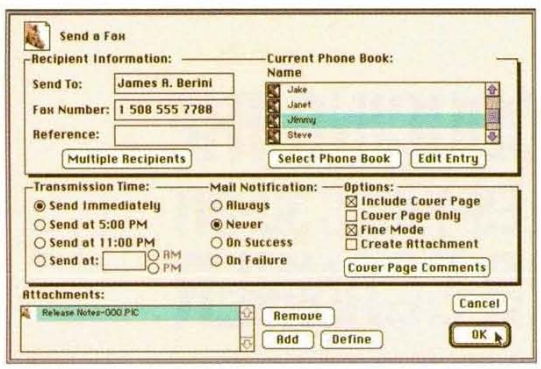
The new LANtastic is expected to ship no later than 90 days after Windows 95, which is due Aug. 24. LANtastic systems currently cost about $100 per node; the company said prices for LANtastic for Windows 95 should be comparable.

The new LANtastic will integrate Mac clients via the standard AppleShare and printer drivers in the Chooser; no new Mac client software will be required. Currently, Mac users communicate through the company's $649 LANtastic for Macintosh gateway. According to Artisoft, access via the gateway can be slow and wrought with interoperability problems, but the company will still sell the product to maintain backward compatibility with Windows 3.1 clients.

Artisoft said it was one of five companies selected to license Microsoft's Windows 95 source code; the others are Banyan Systems Inc., Sun Microsystems Inc., Digital Equipment Corp. and Novell Inc. With this information, Artisoft said, it expects to improve the speed of its new network software through the addition of a replacement file system.

"Windows 95 still has a DOS file system; it's ancient and been around for about 20 years," said Sunil Padiyar, Artisoft vice president of software products. "It is not 32-bit; it uses the original 16-

See LANtastic, Page 18



Feature-rich and ready for NT: Omtool's Fax Sr. Enterprise Server system can now use a Windows NT server behind Mac clients.

Fax Sr. opens NT server

By Nathalie Welch

Omtool Ltd. this month expanded its Mac-compatible network fax system, Fax Sr. Enterprise Server, to run on Windows NT.

Available now, a Windows NT-based setup starts at $2,495 for 25 users. It includes Fax Sr. VIP clients for Macintosh, Windows, Windows NT, DOS and Unix Motif. Previously, the server software ran on Digital VAX/VMS and AXP/OpenVMS systems and various Unix platforms. Up to 255 fax modems can be connected to each Windows NT system. Subsequent servers, to be released by Omtool later in the year, will provide fewer features at lower prices, the company said.

Client features in Fax Sr. VIP include automatic retry, delayed transmission, custom cover pages and broadcast faxing. Users can be notified of incoming faxes via various e-mail packages.

The Windows NT version also includes an updated management package that lets administrators analyze fax use for each client. Fax-routing technologies offered include Direct-Inward Dial and dual-tone modulated frequency codes. In WAN environments, a least-cost routing feature forwards outbound faxes to a Fax Sr.-equipped machine in the same area code as the intended recipient.

An unlimited-user Fax Sr. Enterprise Server license is $4,995.

Omtool Ltd. of Salem, N.H., can be reached at (603) 898-8900 or (800) 886-7845; fax (603) 890-6756; sales@omtool.com. □

New server bundles called a good start

By James Staten

Macintosh network managers have mostly positive reactions to Apple's recent announcements of new, faster file servers and a line of World-Wide Web servers, but their views fall short of resounding approval.

Users lauded the new bundles of productivity and management software on the mainstream file servers, which, they said, greatly improve the value of the Workgroup Server line (see MacWEEK, April 3, Page 1).

The file servers began shipping late last month.

"I think the hot applications being bundled are [Wave Research Inc.'s] FileWave for software distribution and [Dantz Development Corp.'s] Retrospect for automated backup," said Ted Johnson, assistant staff manager at US West Communications of Denver. "These are big corporate problems. If Apple can make it clear how the Workgroup Servers solve these needs, and if they can work cross-platform, then we're talking."

Steven Holden, Mac system/applications engineer at Science Applications International Corp. in San Diego, said, "By providing such value-added and widely used server applications, Apple is really making the complete WS line attractive."

Other users were tracking the dollar-and-cents value of the basic file-server software. "The appeal of these servers is the AppleShare bundle — half off, more or less," said Guy Hermann, IS manager at Mystic Seaport Museum Inc. in Mystic, Conn.

Apple's decision to sell the new AppleShare 4.1 with only server

See Servers, Page 18

FOCUS ON

DATABASES

Client-server DB turnaround

By Clifford Colby

Spring has brought a spurt of client-server database announcements.

This past fortnight saw the Apple Worldwide Developers Conference in San Jose, Calif., and DB Expo in San Francisco; together the two shows generated plenty of tool news for the Mac.

At WWDC, Apple and Armonk, N.Y.-based IBM Corp. announced a Visual Basic-like multiplatform tool, code-named Denali, that the two companies are building together. Pictorius Inc. of Halifax, Nova Scotia, and Jyacc Inc. of New York showed off their brand-new client-server development environments, while Software Designs Unlimited Inc. of Chapel Hill, N.C., released FaceSpan 2.0, its Apple-events-based tool for designing custom interfaces.

At DB Expo, Oracle Corp. of Redwood Shores,

See Focus On, Page 18

Tools in the wings

COMPANY	PRODUCT	SHIP DATE
Apple/IBM	"Denali"	First half 1996
Blyth	Omnis7[4]	Early 1996
Cognos	Impromptu	Second half 1995
Gupta	SQLWindows	Second half 1995
Neuron Data	n/a	June
Oracle	Power Objects	Summer
Pictorius	Peregrine	May
PowerSoft	PowerBuilder	n/a
Software AG	Esperant	Second half 1995
Uniface	Uniface Six	May and fall 1995

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BrioQuery 3.1 adds ODBC

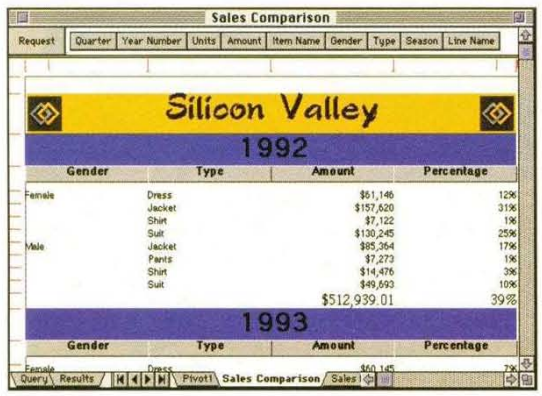
Update stores reports on host

By Clifford Colby

Brio Technology Inc. this month plans to offer BrioQuery 3.1, an update to its data-analysis tools series that will let Macs utilize Open Database Connectivity 2.0.

Although previous versions of the BrioQuery series — Designer, Explorer and Navigator — allowed Windows-based machines to use Open Database Connectivity, or ODBC, to access databases, the new version will be the first for the Macintosh with that capability.

"We are trying to get onto Microsoft SQL Server on Windows NT, and we'll do that by using generic ODBC," said Denny Iwago, supervisor of data management at Honeywell Inc. Space Systems in Clearwater, Fla. Iwago is deploying BrioQuery 3.1.



BrioQuery 3.1 now lets users create style sheets that can be used for formatting reports. Users can also save templates of document layouts for reuse.

The new version will also allow users to store reports in a library on a server for reuse. BrioQuery will be able to update the data in stored reports automatically as information changes in a data warehouse.

"We were waiting for this function," said Judy Chin, a systems analyst with Home Box Office Inc. in New York. "Our users are used to seeing formatted data. They want to hit one button and get what they want."

BrioQuery Explorer and Navigator will cost $595 each, and Designer will be $2,495. Current users can upgrade for $99. The company is planning to release a Power Mac version this summer.

Brio Technology Inc. of Mountain View, Calif., can be reached at (415) 961-4110; fax (415) 961-4572; sales@brio.com. □

August drives ODBC

By Clifford Colby

August Software Corp. is now offering a way for Macintosh users to take advantage of Open Database Connectivity without the cost and hassle of having drivers on each client machine.

August's ODBC OverDriver accesses Open Database Connectivity, or ODBC, drivers stored on Windows NT servers and manages connections to data sources.

Users run August's software and an ODBC driver manager on networked Macs. They place the database-specific ODBC drivers and the company's ODBC Router on a Microsoft Windows NT server. Users send requests through an ODBC-aware application to the server via AppleTalk or MacTCP. On the server, ODBC Router connects the application to the data sources.

Thomas Gray, president of August, said the company will have a version for Open Transport, Apple's new networking architecture, when it ships.

A license for five concurrent users is $2,495 and includes one ODBC Router; OverDriver can be copied freely. Each extra concurrent user is $179 and an additional ODBC Router is $750.

August Software Corp. of Laguna Hills, Calif., can be reached at (714) 454-9007; fax (714) 454-9032; august.sw@applelink.apple.com. □

LANtastic

From Page 16

bit File Allocation Table. With Microsoft's help we have been able to build a completely new file system that can compete with even Windows NT."

Padiyar said Windows 95 source code is also being used to develop an AppleTalk protocol stack that will make Intel-standard PC drives available as AppleTalk server volumes for bidirectional file service and adds AppleTalk print services. In addition, the stack plugs into Windows 95's built-in dial-up remote-access system.

Artisoft said that providing Mac integration falls in line with its intent to target small businesses. The company reports that more than 80 percent of its users are found in sites with 100 or fewer computers.

"The Mac is an important part of the small-business market, and it continues to be an important segment even as these companies move over to more sophisticated networking and operating systems," said Paul Zagaeski, LAN analyst at Computer Intelligence InfoCorp in Boston. "Artisoft has done a superb job of creating universal clients. They don't care what the hell you're running; it will let you connect to the LANtastic network."

Artisoft Inc. of Tucson, Ariz., is at (520) 670-7100 or (800) 846-9726; fax (520) 670-7101. □

Servers

From Page 16

hardware displeased some users, however. "I feel it is still better to buy a Power Mac and configure it myself," said William H. Morrison Jr., research fellow at E.I. du Pont de Nemours & Co.'s Experimental Station in Wilmington, Del. Morrison said he wished the new software bundles were also available separately.

Simon Higgs, president of computer consultancy Higgs America Inc. in Van Nuys, Calif., said: "I doubt if I can persuade any of my clients to buy one. Why should they spend $3,000 for a [Workgroup Server] 6150 when they can get a [Power Mac] 6100 for half that?"

On the Apple Internet Server front, many managers are not convinced that the company's new machines can perform as well as Unix workstations, but they called the announcement a bold first step in the right direction. Apple's Internet Server models are due to ship this month.

"We were planning to build an Internet server and will seriously consider buying a prebuilt one from Apple," said Joseph M. Ragosta, vice president of technology at Graver Chemical in Glasgow, Del.

Alan Oppenheimer, president of Open Door Networks Inc., a Macintosh-oriented Internet service provider in Ashland, Ore., said, "Apple is helping to position the Mac as the premier machine for 'Web-top publishing,' just as it did 10 years ago for desktop publishing."

Yet several managers were quick to point out missing pieces in Apple's current lineup, including the absence of a Unix-based server now that the company has phased out the Workgroup Server 95 (see MacWEEK, April 24, Page 4).

"I think it was a mistake to drop A/UX before having a replacement," said US West Communications' Johnson. "Those of us who implemented it were left high and dry."

Most crucial to managers' evaluation of the new Internet Server, though, will be price/performance compared to workstations.

"This is a good server if all you want to do is Web-related work, but it lacks FTP [File Transfer Protocol], mailing list, Telnet and NNTP [Network News Transfer Protocol] services that are standard on Unix boxes," said Kyle Johnson, system engineer at Durham Computer Services of Durham, N.C. □

FOCUS ON

From Page 16

Calif., said it is on track to release this summer Power Objects, which the company is positioning to compete with Microsoft Corp.'s Visual Basic. The tool will initially run on Windows machines and Power Macs, and the company is evaluating whether to release a 680x0 version.

Reston, Va.-based Software AG of North America Inc. announced it would port Esperant to the Mac this year. Esperant, available now on Windows, is a database-access tool that helps users create custom queries.

Blyth Software Inc. of Foster City, Calif., said it expects to ship Version 4 of Omnis 7 early next year. Sources said the update will be more object-oriented.

Cognos Inc. of Ottawa said it will release Impromptu, a cross-platform data-access and reporting tool, later this year. In March the company shipped PowerPlay for the Mac, its cross-platform data-analysis tool.

This month Uniface plans to release a Macintosh runtime version of Uniface Six, the company's client-server development tool.

In April, Novell Inc. of Provo, Utah, shipped Version 1.2 of AppWare. The company also said it would incorporate OpenDoc into a future version of AppWare, and at WWDC the company showed AppWare creating compiled OpenDoc parts by clicking and dragging graphical elements.

Uniface Corp. of Alameda, Calif., plans to release this month a runtime version of Uniface Six, its client-server creation tool, that will let managers deploy applications on Macs and Power Macs. The company plans to release its full development version this fall.

ParcPlace Systems Inc. of Sunnyvale, Calif., showed VisualWorks 2.0, its Smalltalk-based tool for doing object-oriented client-server development. At the end of April the company shipped VisualWorks for the Power Mac, which joined versions for 680x0 Mac, Windows, OS/2 and Unix.

Representatives of Menlo Park, Calif.-based Gupta Corp. said SQLWindows will be going into its beta-testing phase later this year. According to the company, users will be able to develop and deploy the cross-platform clients on the Macintosh.

PowerBuilder for the Macintosh is now in beta testing, according to PowerSoft Corp. of Concord, Mass. The company is working with Apple on the Mac version. Although company representatives wouldn't specify a release date, they said they will announce shipping plans 60 to 90 days before they are ready to offer the product.

Other companies were showing their Macintosh wares. Sapiens USA Inc. of Durham, N.C., had a Mac runtime version of Ideo, its object-oriented tool that generates SQL code. Business Objects Inc. of Cupertino, Calif., showed BusinessObjects 3.1, its cross-platform database-access tool that uses standard business terms to create queries. Andyne Computing Ltd. of Kingston, Ontario, showed the latest version of Pablo, its data-analysis tool.

Outside the DB Expo show, Neuron Data Inc. of Palo Alto, Calif., said it will release new and updated products this June. Sources said Neuron will be integrating LAN technology in its C++ libraries. □

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BUSINESS

BREAK IN WINDOWS

Windows 95 will have 400,000 beta testers by the end of this month.

— Microsoft Corp.

Users question Mac marketing

By Greg Garry

Whether Microsoft Corp.'s Windows 95 will gain market share at the expense of the Macintosh operating system remains to be seen, but if early user reaction is any indication, Apple may be winning the technical battle and losing the marketing war.

In response to the threat posed by Windows 95, Apple recently circulated an internal memo that details technical advantages of the Mac OS (see MacWEEK, May 1, Page 1).

But while Apple forges ahead with that strategy, some Mac sites may be moving in the direction of Microsoft.

KPMG Peat Marwick of Los Angeles is already working with a beta version of Windows 95.

"I've been running it for about two months and it's impressive — it's really impressive," said Ron Evans, who oversees 50 networks and 30 servers for KPMG's Southwest Pacific region.

Evans said Apple's technical strengths defined by its PECO (Power, Ease of Use, Compatibility and Overall Value) format aren't enough. "All those things are fine and dandy, but the fact is that most of the software out there still runs on the PC," he said.

Microsoft's marketing savvy is also making it difficult for Mac backers in corporate America.

"It's staggering to me that Microsoft is being perceived as a technology leader," said Tom Longfellow, Mac manager at J.I. Case Corp. of Racine, Wis. "If Microsoft can co-opt Apple's technology, why can't Apple co-opt [Microsoft's] marketing strategy? ... I think [Apple] has a terrific product, but it's frustrating to see it dying on the vine."

General Motors Corp.'s Delphi Steering Systems Division in Saginaw, Mich., is being pushed in the Intel-standard PC direction, said Robert Schust, associate sales administrator. Yet Apple has done little marketing to combat Windows 95.

"I don't think that Apple has touted [System 7 and PowerPC] and done the type of marketing that they needed to do," he said. "They had the perfect opportunity with [Windows 95] being delayed."

Other Mac users agree. "I still think that the Mac system has [Windows 95] beat all different kinds of ways, but once again Microsoft is doing a great PR job in making people think that [it] is the Second Coming," said Mark Goldschmidt, a former account manager with MTV in New York. "If Apple is saying anything at all, they must be whispering it down a well." □

**Portfolio recently emerged from Chapter 11 bankruptcy protection. Sources: Dataquest Inc., Ingram Micro Inc.*

Attrition takes toll on PIM market

Fewer developers face more hurdles

By James Staten

A year ago the market for personal information managers was described by industry observers as a treasure-trove with plenty of room for new players and strong growth potential. Today it is a shrinking field with modest growth projections.

"There are just too many players in the market," said Suzanne Snygg, an analyst at San Jose, Calif.-based Dataquest Inc. "It seems everybody has a PIM, and everybody does not have to have a PIM."

Dataquest predicts the overall PIM market will grow 10 percent per year through 1998, despite consolidation. The Software Publishers Association of Washington, D.C., pegs 1994 Mac PIM sales at $21.2 million.

In April, Now Software Inc. of Portland, Ore., proved consolidation forecasts true by buying TouchBase and DateBook from Adobe Systems Inc. and grabbing a dominant share of the Mac market.

Yet most of the solidification in that market has come through the failure of others. Advanced Software Inc., FIT Software Inc. and Pastel Development Corp. have exited the market, while Common Knowledge Inc. of Palo Alto, Calif., and Portfolio Software Inc. of Santa Clara, Calif., are seeking to be acquired.

Ed McBeth, former president of FIT and now at Caere Corp. of Los Gatos, Calif., said the market for FIT's Full Contact simply dried up. "The market experienced much slower growth than any of us expected," McBeth said. He added that the average PIM price dropped dramatically, from about $349 per unit several years ago to about $49 today. "It was like the Oklahoma land rush of software categories," McBeth said. "Too many prospectors for too little prospect."

Consolidation has also occurred as software heavyweights move into the market. Claris Corp. and Berkeley Systems Inc. entered last year, and Microsoft Corp., Lotus Development Corp., Novell Inc. and Symantec Corp. are expected to play bigger roles this year.

Pete Heller, product manager for Claris Organizer, said Santa Clara-based Claris got into the PIM market because there was more opportunity than in more mature markets, such as word processing and spreadsheets.

Novell and Lotus may take leading positions in the market by tying users to their networking solutions, forcing an overlap between PIM and groupware markets. Now Software officials, anticipating such a trend, said that was a major reason behind the purchase of TouchBase and DateBook. □

Internet forecast: $10 billion in sales by 2000

By Jon Swartz

There are lies, damn lies and Internet estimates.

The latest forecast for the Internet — $10 billion in worldwide sales by the year 2000, according to Forrester Research of Cambridge, Mass. — may make even the most fervent World-Wide Web-head wonder. The current market is about $300 million.

But Forrester Research CEO George Colony called the estimates "conservative." He said he expects nothing short of astronomical growth in Internet software and hardware sales, access fees, and services and consulting. According to the report, "The Internet is going to be a huge moneymaker."

By the year 2000, Internet application sales will reach $2.82 billion in software and $2 billion in hardware, the study said, while access charges will exceed $4.2 billion.

Commercial products will quickly displace freeware as developers such as Netscape Communications Corp. of Mountain View, Calif., make " 'SuperWeb' products that have the data-management strengths of Sybase, the application-development features of PowerBuilder and the approachability of Lotus Notes," according to the report.

Another major trend will be the emergence of power browsers to handle the information demands of large business sites with client-server software, the Forrester report said. The company predicts $263 million in sales in five years. □

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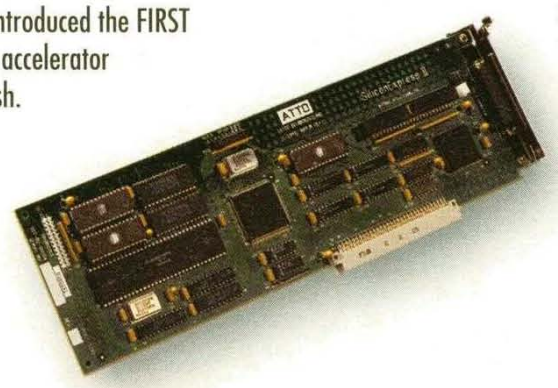

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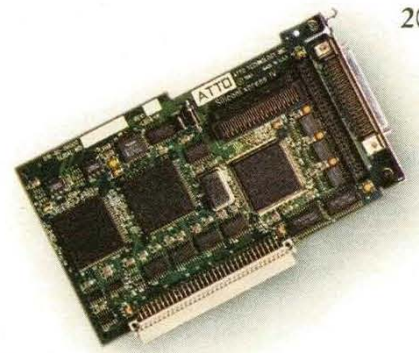

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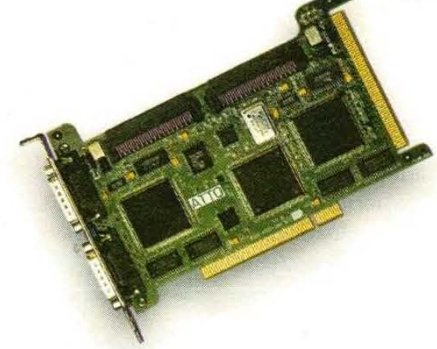

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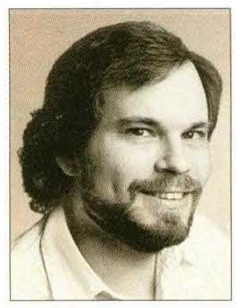
DEALER'S CORNER SCOTT HARRIS

Here's hoping Windows 95 is everything it's cracked up to be



In the old days, the more vociferous Mac fans considered IBM Corp. the Evil Empire. Today, Microsoft Corp. is their more likely target. But the fact is, we Mac users owe a lot to the company from Redmond, Wash.

While desktop publishing brought Macs into many companies, it took Word and Excel for them to achieve acceptance as general-purpose systems outside of graphic arts departments. You can argue whether these programs have been the best the platform has had to offer in their respective categories, but at least they have always been highly competitive, well-marketed and well-supported.

The best tools

Further, Microsoft is a company that corporate America trusts. As good as products from small, Mac-only companies might be, the odds of large-volume, multiplatform purchasers standardizing on such products for their bread-and-butter applications are remote. Despite years of knocking its head against the wall, Apple has never achieved its goals in penetrating Fortune 500 accounts; whatever success it has achieved is owed in good measure to Microsoft.

Unlike some Mac users, I am hoping that Windows 95 will be all it's cracked up to be. I want the best tools I can get, regardless of what company makes them. Some may be emotionally attached to their platform of choice, but I think most of us prefer the Mac simply because it's superior for our purposes.

If Microsoft makes a better product, so be it. We'll benefit from the product and perhaps also from the additional pressure it will put on Apple.

But I want Windows 95 to achieve success only if it's deserved. I admit, I'm a little apprehensive about that.

The company seems to be committed to shipping it this year, and while officials insist the product will indeed be ready for prime time, this is, after all, the same company that thought the performance and stability of the initial version of Word 6 for Mac was sufficient for release.

Yes, Microsoft sometimes plays fast and loose with the Mac interface. The company is notorious for bending programming rules so that other companies must "special case" their products to get them to work with those from Microsoft.

Logical changes

Excel is still incapable of doing a proper Mac cut-and-paste job in cell operations. Cut items within cells don't disappear until they are pasted, and they can be pasted only once; the Clipboard is cleared upon almost any operation, so any paste that isn't done immediately requires going back and recopying the original. No other Mac spreadsheet (including Microsoft Works and ancient Multiplan spreadsheets) has ever been so un-Mac-like in such a fundamental operation.

But many of Microsoft's deviations from any established Mac standards have in fact been useful and logical — and some have themselves become part of the de facto standard Mac interface.

Sure, there are legitimate complaints to be leveled against Microsoft. But the press and the BBSes are already full of those, and sometimes even a Goliath can use a little support. □

Scott Harris is president of The Media Room in Mt. Kisco, N.Y.

MacWEEK index
APRIL TOP SELLERS

The top Macintosh products by dollar volume and category at ComputerWare, a chain of Mac-only resellers in California. The list includes Apple-label products.

MAR.	APR.	CPUs
1	1	Power Mac 7100/80 8/700/CD
2	2	Performa 6115CD 8/350
3	3	Performa 630CD 8/250
5	4	Power Mac 7100/80 8/500
*	5	PowerBook 520c 12/320

MAR.	APR.	Graphics and multimedia
1	1	Adobe Photoshop 3.0
3	2	Adobe Illustrator 5.5
2	3	Fractal Design Painter 3.0
4	4	Macromedia FreeHand 5.0
*	5	Deneba Canvas 3.5
*	6	HSC Kai's Power Tools 1.0
5	7	Diehl Graphsoft MiniCad 5.0
8	8	Macromedia Director 4.0
6	9	Adobe Premiere 4.0
7	10	Strata StudioPro 1.5

MAR.	APR.	General applications
2	1	QuarkXPress 3.3
1	2	Microsoft Office 4.2
*	3	Adobe PageMaker 5.0
5	4	Apple System 7.5
10	5	Claris FileMaker Pro 2.1
7	6	Microsoft Word 6.0
4	7	Microsoft Excel 5.0
3	8	Insignia SoftWindows 1.0
6	9	ClarisWorks 3.0
*	10	Intuit MacInTax (federal)

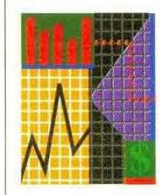
MAR.	APR.	Hardware
1	1	Apple Multiple Scan 17" monitor
10	2	Apple LaserWriter 16/600 PS
*	3	Apple Multiple Scan 15" monitor
2	4	Apple Multiple Scan 20" monitor
6	5	Apple LaserWriter Select 360
*	6	Hewlett-Packard 5MP printer
5	7	Apple Color StyleWriter 2400
4	8	Hewlett-Packard DeskWriter 540 printer
*	9	Hewlett-Packard 4MV printer
7	10	Sony Multiscan 17sf monitor

MAR.	APR.	Connectivity
3	1	Global Village TelePort/Platinum
2	2	Global Village PowerPort/Mercury
1	3	Global Village TelePort/Gold II
4	4	SupraFAXModem 288
5	5	Asanté FriendlyNet 10BASE T
7	6	Global Village OneWorld
6	7	Global Village Mercury/Duo
9	8	Global Village PowerPort/Gold
8	9	SupraExpress 144
10	10	Global Village TelePort/Mercury

MAR.	APR.	Utilities
2	1	Symantec SUM for Mac 3.1
4	2	Casady & Greene Conflict Catcher 3.0
1	3	Connectix RAM Doubler 1.5
6	4	Now Utilities 5.0
3	5	Symantec AntiVirus for Mac 4.0
7	6	FWB Hard Disk Toolkit 1.6
5	7	Berkeley Systems After Dark 3.0
9	8	Aladdin StuffIt Deluxe 3.5
*	9	Virex Mac 5.5
*	10	Norton DiskDoubler Pro 1.1

**Didn't make top 10 last month. Source: ComputerWare.*

OFF THE WIRE



- **Newton Source has plans to expand**
- **Financial results keep rolling in**
- **Apple declares quarterly dividend**

Reflecting a spike in interest in Apple's PDA, **Newton Source,** a one-stop shop for Newton hardware, software and accessories, is expanding. The chain, which already has outlets in New York and San Francisco, last week opened a store in Los Angeles and is planning to open another in Chicago by midsummer, said Clarence Wesley, general manager for Newton Source Inc. … **Global Village Communication Inc.** of Sunnyvale, Calif., reported mixed results. The networking company said fiscal year 1995 sales climbed 72 percent, to $80 million from $46.6 million in 1994. However, Global Village lost $6.2 million, compared with profits of $4.3 million last year. … CAD developer **Diehl Graphsoft Inc.** announced third-quarter sales of $1.3 million, an increase of 51 percent from $863,000 in the same quarter last year. Profits for the Columbia, Md., company increased 69 percent, to $324,000 from $192,000 a year ago. … **Avid Technology Inc.** rang up record revenue of $83.9 million for its first quarter, up 89 percent from $44.3 million in the same quarter a year ago. The Tewksbury, Mass.-based maker of digital-media products said it was $958,000 in the red for the quarter; last year, Avid earned $2.5 million. … Computer superstore chain **CompUSA Inc.** registered highs in revenue and net income for its third quarter. The Dallas-based company said sales grew 30 percent, to $776 million from $599 million in the year-ago quarter, and profits skyrocketed 256 percent, to $12.1 million from $3.4 million last year. … **America Online Inc.** reported a loss despite a leap in sales for its third quarter. The Vienna, Va.-based on-line service lost $2.8 million, compared with a profit of $1.3 million in the same quarter a year ago. AOL posted sales of $106.4 million, up 236 percent from $31.7 million last year. … Statistics software maker **SPSS Inc.** disclosed stellar results. The Chicago-based company said first-quarter sales expanded 29 percent, to $14.8 million from $11.5 million in the same quarter a year ago; profits, meanwhile, were $1.4 million, up 54 percent from $938,000 last year. … **Banyan Systems Inc.** of Westboro, Mass., said first-quarter sales rose 30 percent, to $33.7 million, and profits were $3.6 million, compared with $7.6 million. … **Apple's** board of directors in May declared a 12-cent-per-share dividend for the company's second quarter ended March 31. It was the 33rd straight quarterly dividend for Apple. … **Alantec Corp.,** a San Jose, Calif., developer of networking products, announced an initial public offering of 2.2 million shares of stock at $36.25 per share. … Ross Glatzer, CEO of White Plains, N.Y.-based **Prodigy Services Co.,** resigned May 1. … **RasterOps Corp.** has changed its name to **Truevision Inc.,** the digital-video company it acquired in 1992. It won't be changing addresses, though; the company remains based in Santa Clara, Calif. □

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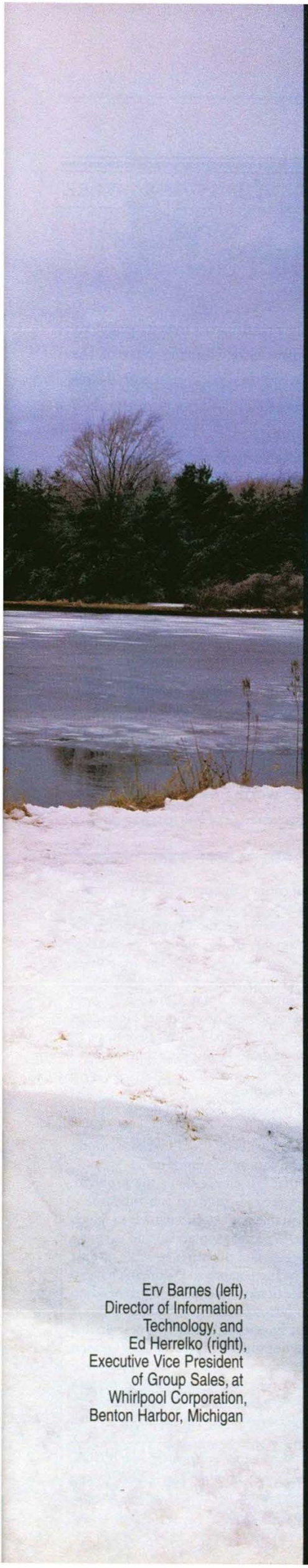

Erv Barnes (left), Director of Information Technology, and Ed Herrelko (right), Executive Vice President of Group Sales, at Whirlpool Corporation, Benton Harbor, Michigan

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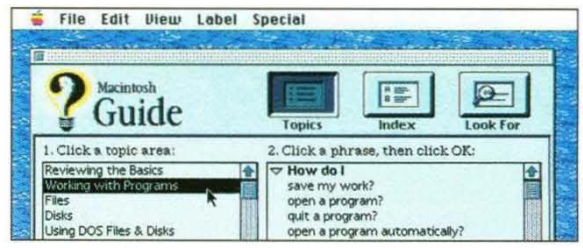

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BPA

Strength in Numbers

Central to the success of the Power Macintosh, as with any other high-end Mac, has been its appeal to graphics, publishing and 3-D professionals. These individuals require — and continually buy — machines with the highest performance. That's why the likes of Sun Microsystems Inc. and Silicon Graphics Inc. have tried desperately to woo these users with their powerful Unix computers.

Power-hungry Mac users cannot simply wait for the performance gains found in the next PowerPC processor. That's why they've been evaluating Sun and SGI technologies. Although Sun's and SGI's initial efforts have not stolen a significant portion of Apple's primary constituency, they have made it sit up and take notice. More important, they have made Apple executives act by playing their multiprocessing cards ahead of schedule.

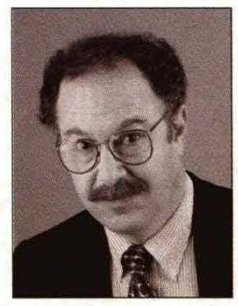
By striking a co-development deal with DayStar Digital Inc., Apple and Mac-compatible manufacturers will be able to build multiprocessor computers before the availability of the Copland operating system, which was supposed to initiate Apple's multiprocessor strategy. By making DayStar's multiprocessor libraries part of the Mac OS design this year, Apple is signaling to both developers and CPU-bound users that it will not be outflanked by Sun or SGI and their multiple-CPU machines.

Apple's design is not as strong as the current multiprocessing capabilities in Unix. No one is suggesting otherwise. But by declaring a clear path for graphics, desktop publishing and 3-D programmers to follow now, Apple has shown that it will not give up the high end of its core market without a fight.

Most of the major developers who have seen the Apple-DayStar code have been impressed and say they are willing to build applications that make use of it. Those impatient users who have already invested in Sun and SGI technologies are equally eager to see how their favorite applications perform on Macs with two to four RISC processors. For them, supporting one architecture, preferably the Mac, will be worth unloading their Unix machines — but not at the expense of performance. □

THE SECOND DECADE HENRY NORR

Apple bashing? Guilty, but it's for a good cause



We beat up on Apple pretty regularly in these pages. Hardly a week goes by without one columnist or another — or sometimes several of us — whining about something the company has or hasn't done and raising the specter of doom if change doesn't come soon. And it's not just MacWEEK; nowadays you get similar fare from the Mac monthlies.

Some among you have made it clear that you find this negativity mystifying, if not infuriating. When *you* look at the Mac, you see a great product — increasing performance, declining prices and continuing innovation. You note Apple's leadership in multimedia and its successful transition to RISC. You read our railing on the shortcomings of the Mac operating system, but then you spot a Wintel-using co-worker struggling with IRQs and CONFIG.SYS files.

And, on the business front, you point to record Mac sales, an installed base approaching 18 million, Apple's healthy bottom line and a panoply of hopeful possibilities arising out of the licensing of the Mac OS.

Nattering nabobs

Why all the gloom and doom then? Do we bash Apple simply to attract attention or to fill our columns? Or have we perhaps fallen under the spell of the Evil One?

I can't speak for anyone else, but I can offer some observations about myself that I suspect apply to my colleagues as well.

Underlying everything I write about the Mac is a profound and persistent frustration: Apple has manifestly superior technology. Why isn't it No. 1? Relatively few of the critical columns I and others write target the Mac's actual deficiencies; most focus on Apple's inability to capitalize on its advantages.

This disjunction between the Mac's merits and its market position is nothing new, of course. But many of us had hoped to see the tide begin to turn by now, thanks to the PowerPC and Apple's professed commitment to expanding its market share. Instead, we've seen the Mac share decline; highly visible corporate customers jump ship; and Intel Corp., Microsoft Corp. and Compaq Computer Corp., not to mention Packard Bell Inc., continue to steal what should be Apple's thunder.

Second fiddle?

"But if the rest of the world doesn't appreciate the Mac," some of you may be saying, "it's their loss. Why should we care as long as we can continue to enjoy it?"

It's that last clause that's the problem. Being a second standard is a fundamentally unstable position in a market in which there are constant, powerful and in many ways legitimate pressures to settle on just one. The Intel-standard PC doesn't have to be better (it never has been); it just needs to be good enough and getting better. But if the Mac loses its superiority — or even just its image of superiority — it loses its reason for existing.

That's why we're so quick to pounce whenever we think we see a false move; it is the platform's fate that's at stake. □

Henry Norr, editor emeritus of MacWEEK, welcomes feedback in the MacWEEK forums on CompuServe or eWorld or at hnorr@ftp.macweek.ziff.com.

LETTERS

On Location calls it a wrap

Thank you for the article "Management and archiving help control data chaos" (MacWEEK, April 24, Page 27). Richard Rawles made several good points and enlightened me on several issues.

The Product Info list included On Location 2.0 from ON Technology Corp.

As of its most recent posts to America Online and eWorld, ON Technology no longer has any plans for further development of On Location. It has orphaned users of On Location who have been loyal to it since Version 1.0. This is most disturbing, since On Location 2.x sports several significant and fatal bugs that manifest themselves on Macs running System 7.1 and later.

Check eWorld and AOL and you'll see a string of very upset users voicing their displeasure with ON Technology's lack of commitment to customer service. This lack gives me pause when considering other ON Technology products, such as Meeting Maker XP or Instant Update.

Peter A. Cohen, network administrator
Corey & Company: Designers Inc.
Watertown, Mass.

Go native, get faster

I read Henry Norr's column (MacWEEK, May 1, Page 30) and (surprise!) I agree with him. Even though I have a Power Mac and have been a Mac supporter since I bought the first 128-Kbyte Mac, I'm disappointed. We have a Pentium at work, and I think that it's faster in doing everyday things than my 7100. Starting programs and opening files is a lot faster on the Pentium, largely due to the fact that there is still so much non-native code in Apple's own operating system.

What I don't understand is, given that the PowerPC instruction-set specifications must have been known to Apple for more than two years, why haven't they put a little effort in making their operating system and applications native? Do you have any clues? Perhaps it was a marketing decision — now they can sell native upgrades for years to come.

Pete Shell
Carnegie Mellon University
Pittsburgh

CPUs, yes; monitors, no

Scott Harris' column about the problems with Apple's Color Plus monitor and monitor repair strategy is right on (MacWEEK, April 10, Page 21). Given Apple's public commitment to good industrial design, the manufacture of an essentially unrepairable monitor is unacceptable.

Perhaps more unfortunate for Apple is that Harris' prediction for the predominant consumer reaction is equally accurate. I have experienced my last monitor failure and ridiculously priced "repair" estimate. I can no longer spec an Apple monitor for any machine.

I don't agree with Harris' suggestion that users purchase AppleCare contracts on systems that cannot be repaired efficiently. I will continue to purchase Macintosh CPUs, but I'll put monitors from NEC Technologies Inc. on top of them. Component failure may be a fact of life, but my employers still want me to take all reasonable steps to alleviate the inevitable pains.

Stephen Masiclat, director
Noyes Language Center
Cornell University, Ithaca, N.Y.

Unix better as Net server

After all the fuss of late about the position of Macs on the Internet, I feel compelled to throw in my two cents. As a TCP/IP client I find Macs very easy to administer and use. There are few of the "gotchas" of most Intel-based operating systems; TCP/IP configuration and connections by either LAN or modem are, for the most part, stable. But the biggest problem with Macs on the Internet is their use as servers.

Since the Mac operating system is not multitasking or multithreaded, Mac servers do not function well as World-Wide Web or FTP (File Transfer Protocol) servers when under a moderate-to-heavy user load. While steps have been made with Mac CGI (Common Gateway Interface) scripts for MacHTTP, a Mac server cannot handle the load that a Unix server can when more than one person needs to access a CGI application simultaneously. For people who will not or cannot devote the resources to a more robust Web server or who simply do not need to do much but pass Web pages, the Mac is a good choice. I've seen some good work done with them, but I wouldn't recommend one.

This should not be taken as a tirade against the Mac. I use Macs for a lot of routine development and administration work.

Chris Barker, New York

How to contact MacWEEK

Send letters to MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105; fax (415) 243-3651. We can be contacted on-line: CompuServe, 76077,1351; eworld, MacWEEK; MCI, 323-1203; Internet, letters@macweek.ziff.com; fax (415) 243-3651. Include your name, address and phone number. We reserve the right to edit for clarity and length.

THE MAC MANAGER DON CRABB

Note to Power Computing: Make portable clones, too

Dear Stephen Kahng:

Mac Managers need your help to replace their aging inventories of PowerBooks. Those 100-series models are starting to hold back our mobile staffers. You're already giving us new hope for lower-priced PowerPC desktop boxes thanks to your new Power Computing price/performance gorillas (see MacWEEK, May 1, Page 1).

Now we need to take a look at the potential Mac notebook clone market and see if you can work your magic there, too.

To put this in context, a few weeks back my colleague Rick LePage made the case for Apple closing the gap with its PowerPC 603e-based PowerBook 5000 notebook line, which is expected to ship in August (see MacWEEK, May 1, Page 3). The gap that is being hypothetically closed is, of course, the huge price/performance rift between Apple's current PowerBook 500 and 200 lines and the plethora of Wintel DX2, DX4, and now Pentium clones.

Well, Steve, I've seen a prototype of the 5000 series (no, not under nondisclosure agreement, so I don't want to hear from any Apple attorneys, please) as well as prototypes for new Pentium notebooks coming from Toshiba America Information Systems Inc., IBM Corp. and NEC Technologies Inc. Guess what. Apple's in trouble. Unless it can perform some major fiscal surgery, the 5000s are still going to be the high-priced spread.

The goodie bag

As you know, even if the 5000s ship with all the goodies (see MacWEEK, May 1, Page 1), that will only bring them up to par with, rather than enable them to leapfrog, the best of the current crop of Wintel notebooks, both in terms of price and performance (we'll leave those intangible Mac operating system advantages out of it for now).

You know what I'm getting at here. Cruise the back of PC Magazine. Wintel notebooks can be had in the $3,000-to-$4,000 range with 10.4-inch, accelerated TFT (thin-film transistor), active-matrix color displays; 100-MHz DX4 CPUs; 16 Mbytes of RAM; 500- to 700-Mbyte hard drives; 16-bit stereo sound; two PCMCIA slots; built-in 5.35-inch CD-ROM drives; and Windows 3.1.

By the time of the expected PowerBook 5000 rollout, the competition will include 75-MHz and 110-MHz Pentium notebooks with the full bag of goodies intact, running Windows 95. And you also know they'll cost less than Apple's 5000s.

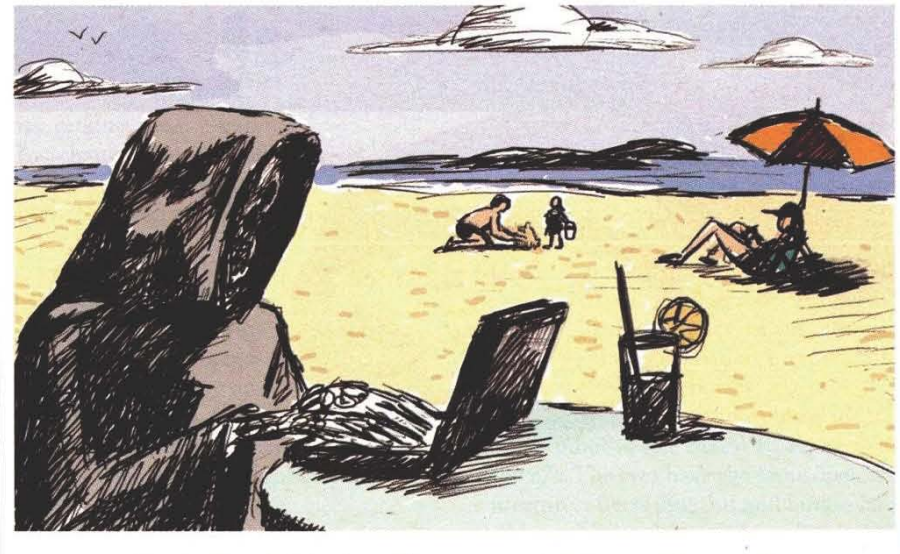
They will come

I know you're reluctant to get into the cutthroat notebook market, but there are bucks to be made if you do it right. Maybe Power Computing Corp. can't roll out PowerPC-based PowerBook clones in 1995, but how about in 1996? I know you want to stick to your desktop direct sales and Mac clone motherboard sales strategies, but if you look hard you'll see your market for PowerBook clones, too.

Which brings us back to the heart of our problem: The new 5000s aren't likely to close our Wintel notebook gap at all.

You've shown that you know how to exploit the price/performance gap in Apple's Power Mac desktop line. Mac managers hope that you'll see the notebook price/performance gap, too, and decide to exploit it to our great benefit. □

Don Crabb welcomes comments at his Internet address decc@cs.uchicago.edu. You can also check out his home page at http://cs-www.uchicago.edu/~decc/.



Death takes a holiday but still manages to check in remotely once a day.

Comments? Ideas? Contact Eli at elitoons@eworld.com

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New AAUI transceivers.

Allied Telesyn International the world's largest supplier of Ethernet® media products introduces a new line of AAUI Ethernet transceivers providing connectivity to 10BASE-T twisted pair, 10BASE2 thin coaxial, and 10BASE-FL/ FOIRL fiber optic media.

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MW APTI

CD-ROM EXPLOSION

The worldwide installed base for CD-ROM drives is expected to grow to 49.5 million in 1995.

— InfoTech

Imaxis 2.0 brings doc handling to small workgroups

By Jonathan A. Oski

SESI offers OCR, full-text searching and cataloging in one package.

Systems Engineering Solutions Inc. hopes to bring Mac users one step closer to the mythical paperless office with Imaxis 2.0, a client-server document-management system that integrates scanning, OCR, full-text searching and cataloging tools in one package. Aimed at single users or small- to medium-sized workgroups, Imaxis lets you store, organize and retrieve scanned paper documents and electronic files on a server.

Imaxis is divided into four components: client, server, and scanning and OCR software. The $3,995 Four-User Pack consists of one server, four clients, and scanning and OCR software. For single users, Version 2 adds a new $995 Start-up Pack with one client, a server and scanning software. All Imaxis components are also available separately, so you can expand your system as necessary.

Imaxis has relatively demanding requirements. For the server, SESI recommends a Quadra-class Macintosh running System 7.1 or later with at least 8 Mbytes of RAM, an Ethernet adapter for network configurations and a large hard disk for storing documents. Removable media such as magneto-optical and WORM (write-once-read-many) drives are also supported. Documents on the Imaxis server are accessed via AFP (AppleTalk Filing Protocol).

File sharing is sufficient for smaller workgroups, but AppleShare is recommended for larger installations. Since the Imaxis server relies on file sharing or AppleShare, you will need to create users and groups for everyone who will access the server.

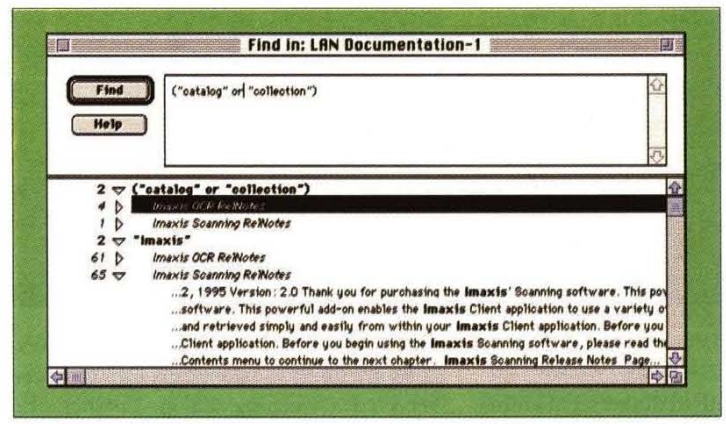
The client requirements are a bit heftier. SESI recommends a Quadra-class machine with 20 Mbytes of RAM, a 19-inch display and an Ethernet card for network configurations. The scanning and OCR options are layered onto the client component and can boost the requirements to well beyond these numbers if you plan to scan gray-scale or color images.

SESI estimates that you will need 8 Mbytes of available memory to scan 16-shade gray-scale images, and 35 Mbytes for color images.

Imaxis uses the concept of drawers to manage document storage. Using the Imaxis server application, you create drawers to store related documents and folders on the server. For example, you might create one drawer to hold scanned invoices, one for internal e-mail and one for personnel information. When you create a drawer, you also set up a catalog with fields that hold information about each document you store. Fields can be defined as character, integer, decimal, value list, long text or date. When you add a document to a drawer, you fill in these values in a catalog record, which can then be used to search and retrieve the document later. We found this to be flexible and easy to set up.

Security for each drawer is established

See Imaxis, Page 31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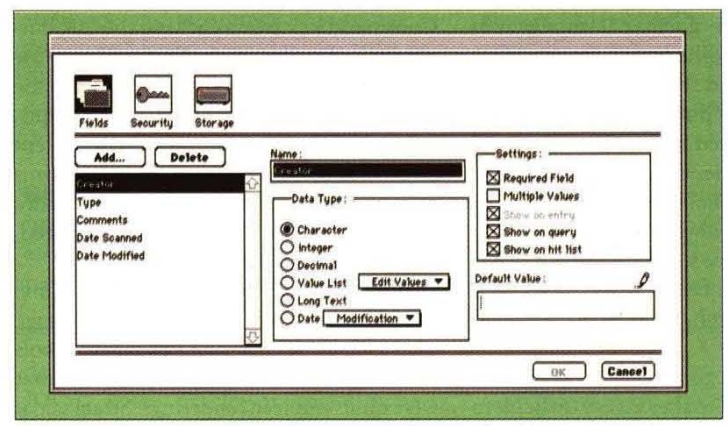
SESI's Imaxis lets you search for full-text indexed documents. You can specify a series of search criteria in Boolean format to help zero in on specific documents.



When you create an Imaxis drawer, you can set up catalog fields that can later be used to find and retrieve documents stored in that drawer.

score card

Imaxis 2.01

Systems Engineering Solutions Inc.
List price: $3,995*
Overall value ◆◆◆

Imaxis is a document-management suite well-suited for small- to medium-sized Mac workgroups. Along with client and server components, additional options support scanning and OCR of black-and-white, gray-scale and color documents. Imaxis offers flexible organization and searching features but demands hefty hardware configurations, especially for client workstations. Its strength lies in its searching facilities. You can search and retrieve documents on the server using catalog entries, full-text searches or bookmarks. SESI offers a complete Mac-only solution that is hampered by a relatively high price and the Mac operating system's inadequate security and hierarchical storage facilities for document imaging. But for smaller organizations looking for an easy way to create a paperless office, Imaxis is a good start.

Performance ◆◆◆
Features ◆◆◆
Ease of use ◆◆◆
Documentation/support ◆◆◆

**Four-User Pack with server, four clients, scanning and OCR software. Additional clients, $695 each. Additional servers, $995. Scanning software, $495. OCR software, $895. Single-user Start-up Pack with a server, one client and scanning software, $995.*

Key ◆◆◆◆◆ *Excellent* ◆◆◆◆ *Very good* ◆◆◆ *Good* ◆◆ *Fair* ◆ *Unsatisfactory*

Strata's Vision 3d update plugs in Boolean support

By Sean Wagstaff

Version 4.0 of modeling and animation app looks, feels like previous version.

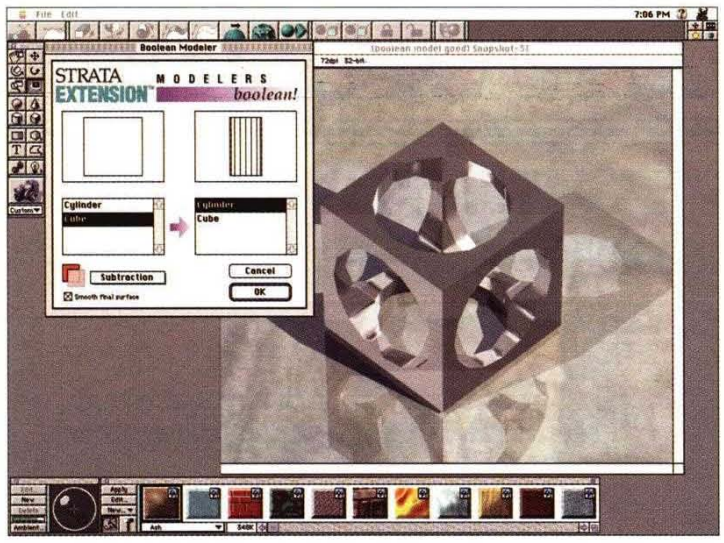
In an effort to distinguish its product line, Strata Inc. changed the name of its midrange 3-D modeling, rendering and animation application from StrataVision 3d to Vision 3d. However, Version 4.0's enhancements — including Boolean operations and a rendering option that produces a scalable, vector-based image instead of a bit map — are a direct trickle-down of the flagship StudioPro's feature set.

Strata is now adding new features to the $695 Vision 3d through plug-ins. In addition to the new features, the Skin, Unskin and Sweep extensions are now included in Vision 3d instead of being sold as optional add-ons.

Vision 3d requires System 7 or later and 8 Mbytes of RAM. It will run on a 68030 Macintosh or higher, or on a Power Mac. Installation is either custom or fat binary.

In appearance, Vision 3d is almost identical to StudioPro (see MacWEEK, Feb. 13, Page 27): The two have the same open architecture, effects plug-ins and button bar. What sets Vision 3d apart from StudioPro

See Vision 3d, next page



Boolean modeling tools are the most significant improvement to Strata's Vision 3d 4, making shapes such as this possible. You use the Boolean Modeler window to create Booleans. In this dialog we are subtracting a cylinder shape from a cube.

Vision 3d

From previous page

is Vision 3d's greatly reduced set of animation features.

Vision 3d is a polygonal modeler at heart. Its spline-editing tools are modal: A model is converted from a faceted polygonal shape to a spline model for editing. Then it is converted back to a polygon and placed into a scene. Once shapes are converted to polygonal form, they can't be edited as spline objects again. The 2-D drawing tools have similar constraints but are even stranger: Detail work is executed as 2-D paintings, which are then converted into line art.

Vision 3d lacks good numeric control of operations, which makes it very difficult to assemble objects in several stages. The program would benefit from much better interactive feedback during modeling operations. Because the modeling extensions are modal, you don't see the results until after a function, such as lathing, is completed.

Boolean operations

Booleans have the potential to save even the most feeble modeler from jeers. Basically, Booleans use mathematics to carve one shape with another, form a model out of the intersecting volumes of two shapes or simply add two models together to form a new shape. These operations make it possible to create extremely complex shapes without difficult and time-consuming modeling maneuvers. Many shapes, such as a cube "drilled" by several cylinders, would be almost impossible to model any other way.

We were excited to see Boolean support added to Vision 3d, but we encountered numerous difficulties with the extension and were sometimes disappointed with the tool. Most significantly, the Boolean operators suffer from a lack of accuracy. Many of our attempts at creating interesting shapes, particularly when using the Subtraction option several times on the same shape, resulted in vast numbers of ragged edges and loose polygons floating in space. This occurred even when we were working with simple primitive shapes such as cubes and cylinders.

We also generated several models with apparently random missing polygons that were manifested as triangular holes in the model. The documentation claims that a dialog box will warn you when these problems are likely to take place, but we never received a warning dialog. Further, the documentation maintains that pressing the Command key when clicking the OK button in the Boolean dialog box will increase the resolution of the models used for the Boolean operations. In some attempts, using the Command key had no apparent effect. As a work-around, Strata recommends grouping models together before using the Subtract feature. This reduced, but did not eliminate, our problems.

While we did have success with some Boolean operations, many of the models we tried to create with Vision 3d's Boolean tools were seriously flawed, with problems that were quite visible in renderings. Strata said it is aware of problems with the Boolean tools and is working on a solution.

We were also dissatisfied with the program's currently available Boolean options: There is no Split command for slicing shapes based on their intersections (which is useful for making drawers in a bureau) and no provision for retaining the original parts used in Boolean operations. It is also disappointing that Vision 3d has no Section operation that would allow us to slice a model into independent pieces. In addition, objects created with Booleans are treated as a single unit, even if they are separated by empty space.

Another new feature in Vision 3d was met with a good deal more success. RenderScript is an extension that allows you to render images in scalable EPS format, which may be helpful to desktop publishers who want to add 3-D objects to their creations. RenderScript produces mosaiclike patterns of tiny colored rectangles that can be enlarged to any size without loss of resolution. Using this extension is a good way to create a rendering for a poster-size or bigger enlargement. The results are similar to those you would get using Adobe Streamline on finished 3-D renderings, although Strata's output is not in editable Adobe Illustrator format.

Vision 3d, like StudioPro, boasts one of the best ray-trace renderers on the Mac. StrataVision 3d 3.0 omitted StudioPro's Raydiosity option, but most users would never endure the many days of rendering time it calls for, anyway.

Vision 3d's texture mapping interface is identical to StudioPro's and is arguably the easiest to use of any we've seen. It offers a very fine degree of control over texture qualities and mapping effects, such as bumps and specularity. Consequently, it's easy to create highly realistic surfaces in the program.

Vision 3d remains a great choice for users who need a high-quality rendering tool to use with CAD programs such as Diehl Graphsoft Inc.'s MiniCad, as well as with other 3-D software that has less-complex rendering. Fortunately for Vision 3d users, liberal use of surface maps can make up for many of its modeling deficiencies.

While Vision 3d 4 lags behind as a modeler, the ray-trace renderer it shares with StudioPro remains one of the best on the Mac.

Performance

As with StrataVision 3d 3.0 (see MacWEEK, May 16, 1994, Page 46), Version 4's modeling tools — particularly the modeling extensions — are sluggish and somewhat cumbersome, even on a Power Mac. Lathing, lofting and sweeping are all slower than they should be. Vision 3d is the only product we can remember in which the progress bar jumps back toward zero several times on its way to completion.

While transformations, such as the replication of a shape, are generally straightforward and quick, matters are complicated by the fact that replication is always relative to an object's current position; you can't control operations based on an object's absolute position in space.

Although some modeling extensions are very slow, the application's overall performance is acceptable.

Documentation and support

While Vision 3d's documentation is still intimidating in its mass, those with the patience to read both thick volumes will be well prepared to use the application and will acquire a fairly good general understanding of 3-D graphics as well. Strata has added a fine color tutorial in a third volume that will definitely help new users get up to speed.

Technical support, which was very competent, is free and unlimited. It can be accessed via fax, toll call, the Internet and eWorld.

Conclusions

Vision 3d hasn't really changed much since its previous release. Despite the new name, it continues to look and act like a stripped-down version of Strata StudioPro. The new Boolean tools — the most significant addition to the program — are hobbled by their lack of accuracy and limited scope. And while RenderScript is a nice addition, it is hardly a major feature.

What has changed significantly, however, is the Mac 3-D market. Lower-end programs, such as Specular International Ltd.'s Infini-D, Alias Research Inc.'s Alias Sketch! and Ray Dream Inc.'s Ray Dream Designer, have improved significantly in features. Meanwhile, higher-end programs, such as Byte by Byte Corp.'s Sculpt and Visual Information Development Inc.'s ModelPro, have come down substantially in price. Specular has yet to ship Infini-D 3.0 but has announced that it, too, will offer Booleans as well as StudioPro-style animation.

Although Vision 3d is still a very good product, this upgrade rates as only a good value. StrataVision 3d 3 users should upgrade if they can work around the Boolean extension problems.

Strata Inc. of St. George, Utah, can be reached at (801) 628-5218 or (800) 678-7282; fax (801) 628-9756; strata3d@applelink.apple.com. □

score card

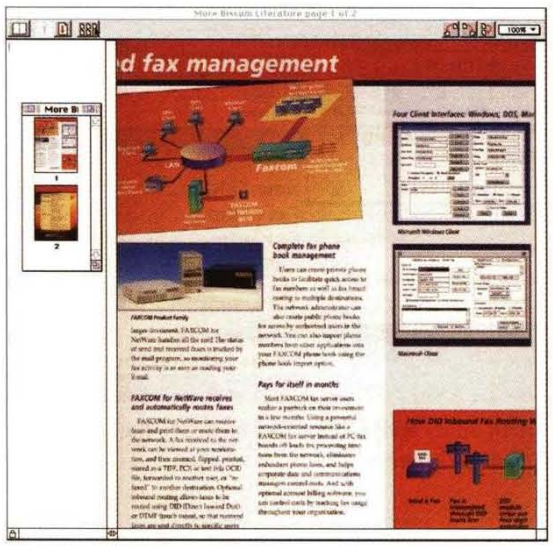
Vision 3d 4.0

Strata Inc.
Overall value ♦♦♦ **List price: $695***

Vision 3d hasn't really changed much since its previous release, except in name. New features in Vision 3d 4 have been added as extensions, so the upgrade looks and feels very much like Version 3.0. The new Boolean tools, the most significant enhancement to Vision 3d, are flawed by their lack of accuracy and scope. RenderScript, an extension for rendering scalable EPS images, is a nice addition, but it's hardly a major improvement. Users of StrataVision 3d 3 will want to upgrade to Version 4 if they can work around the problems with the Boolean extension. While many new and upgraded products have challenged and surpassed Vision 3d's place as a leader in price/performance, it is still a very good product overall, especially for users of other modeling and CAD products who need a high-powered renderer. But this upgrade rates as only a good value.

Performance ♦♦♦ **Ease of use** ♦♦♦
Features ♦♦♦ **Documentation/support** ♦♦♦♦

**Upgrades from StrataVision 3d 3.0, $69.*


d fax management
Complete fax phone book management
FAXCOM for NetWare receives and automatically routes faxes
Pays for itself in months

You can use Imaxis to scan black-and-white, gray-scale or color images and store them on the server.

Imaxis

From Page 29

using System 7's Users & Groups control panel or the AppleShare Administrator application. Users can be granted privileges to see drawers and make changes using the Same, Limited, Owner, User/Group and Everyone levels supported by AFP. If you plan to store confidential information on the Imaxis server, you should be aware that all documents are accessible from the server if the client software is installed there, too. This bypasses any AFP security you have established for the drawers on a server.

Once you've set up drawers, users can create collections — groups of one or more drawers — to organize the information as they see fit. From a collection window you can view the drawers as well as the hierarchy of folders and documents in each drawer.

To add documents to a drawer on the server, you can either scan in hard copy or copy electronic files already on your Mac. When you add any kind of document, you can have it automatically converted to Imaxis' document format, which lets you use the program's advanced searching features. You can optionally leave electronic files in their native formats, but when you open such a document from the server, it launches the native application with the document in read-only state.

We found some shortcomings to the drawer concept that don't parallel real-world situations. The most glaring problem is that documents cannot be moved from one drawer to another. They need to be deleted from one drawer and re-created in another. Imaxis also fails to make use of any of the drag-and-drop features, such as those in Visioneer Inc.'s PaperPort (see MacWEEK, Jan. 16, Page 32), which let you drag pages from one stack onto another to reorganize documents. In addition, Imaxis is not user-customizable beyond the creation of catalog fields at the drawer level. You cannot integrate it with other applications, such as ACI US Inc.'s 4th Dimension or Blyth Software Inc.'s Omnis 7, to create a vertical, tightly controlled application.

Also, we found the memory requirements of color scanning to be enormous. We were unable to scan a letter-size document at anything greater than 100 dpi on our Power Mac 7100/80AV with 50 Mbytes of RAM, 40 of which were available to the scanning process.

Search me

One of the main reasons for implementing a document system is to aid in the process of finding documents. Imaxis offers flexible searching facilities that let you look for a document based on any information stored in a drawer's catalog. In addition, for documents converted to native format or scanned documents on which you have performed OCR, you can conduct full-text searches with Boolean operators, wild cards and proximity parameters. Imaxis' OCR process is reasonably accurate but did not match the results we had using Xerox Imaging Systems Inc.'s TextBridge on the same document. It also does not mark spots where it has difficulty reading text, so cleaning up a document can be tedious.

To further facilitate the searching process, you can create bookmarks that record your place in a specific document on an Imaxis server. Then, by calling up your list of bookmarks and selecting one, the document is retrieved from the server.

Performance

Imaxis' performance will vary depending on the client and server workstations, the network, and the type of storage media used. We tested the program on a Power Mac 7100/80AV with 50 Mbytes of RAM, a 700-Mbyte hard disk and a 1.3-Gbyte MO drive from APS Technologies as our server. The client, scanning and OCR options were also installed on this machine, and we used Hewlett-Packard Co.'s ScanJet IIcx with a sheet feeder to capture documents and images. Retrieval times were less than 10 seconds for most documents stored on MO platters. Times were directly proportional to the size of the document, with color documents the largest and therefore the slowest to retrieve.

Unfortunately, Imaxis does not perform any sophisticated caching other than that provided by System 7, nor does it support hierarchical storage systems or optical jukeboxes, which would increase the availability of on-line storage. As storage requirements grow beyond what can fit on a single disk or platter, you may find it necessary to add another Imaxis server to help distribute the load.

Documentation and support

Imaxis documentation is divided into server- and client-related manuals that are easy to read and well-indexed. Read-me files are also included to answer a broad variety of questions and address some troubleshooting issues. SESI provides toll-free access to technical support and was able to answer most of our questions on a timely basis.

Conclusions

For small- to medium-sized workgroups, Imaxis is worth considering if you are looking for a better way to manage a collection of paper and electronic files. Its search facilities are quite good, especially when you use the full-text searching capabilities on documents you've filtered into Imaxis' native format. On the other hand, storage and backup should be a concern to anyone considering a document-imaging solution, and Imaxis is somewhat limited by System 7's inability to support hierarchical storage subsystems. If you need to store and manage a large number of documents, you may want to consider one of the higher-end offerings, such as Micro Dynamics Ltd.'s MARS. Imaxis is also hampered by its rather high price. If you can wait, this may be one instance where you are better served by waiting for this still-emerging technology to evolve a bit further and drop in price.

Systems Engineering Solutions Inc. of Dunn Loring, Va., can be reached at (703) 204-2114 or (800) 462-9470; fax (703) 207-9146; imaxis@sesi.com. □

IN BRIEF

OptiMem RAM Charger 2.01

Memory-management util more reliable, easier to use

Overall value ♦♦♦♦

Before Connectix Corp.'s RAM Doubler conquered the world, there was OptiMem, a humble utility from Jump Development Group Inc. that brought dynamic memory management to the Macintosh. Now called OptiMem RAM Charger, the $59.95 utility doesn't expand your RAM but makes more efficient use of available RAM. Version 2.01 improves reliability and ease of use, and it offers controls to maximize performance with specific applications.

OptiMem RAM Charger requires System 7, about 600 Kbytes of disk space and 40 Kbytes of RAM.

Charge it

OptiMem's main function is to change the way RAM is allocated. It does so by patching the Mac's operating system so that an optimized application can have access to all of the RAM not in use by the system software or another application, whether or not that RAM is inside the application's partition. This means that you can run software in small partitions (sometimes smaller than the suggested minimum) and let OptiMem fulfill even extraordinary memory demands from the general pool of available RAM. You'll get fewer out-of-memory messages and will be able to run more applications simultaneously. If you're using a Power Mac, you'll even get fixes to a couple of Modern Memory Manager bugs. Most applications can be optimized.

OptiMem RAM Charger offers both better ease of use and greater control. Previous versions required you to go to OptiMem's control panel to change a setting for an application, and you had to use the Finder's Get Info boxes to change the partition size for optimized applications. Now all parameters can be controlled from the new Settings window, which offers a variety of basic and advanced controls. You can now use a simple keystroke to toggle OptiMem on and off for a specific application rather than having to open the control panel every time. The first time you launch an application, OptiMem will automatically open a dialog box asking whether or not you want to optimize it.

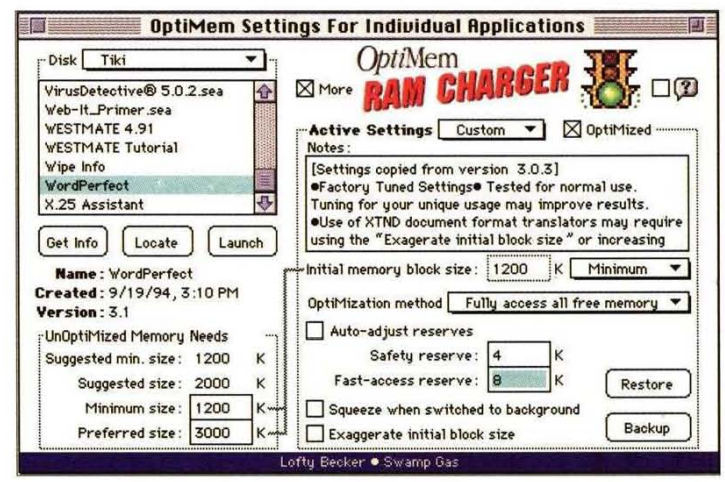
The utility also features a new Heads-up window, which offers feedback such as current memory use, OptiMem performance statistics and the name of any application that is blocking the efficient use of available RAM by other programs.

Performance

In a month of operation, we encountered virtually no problems with OptiMem. The ones that did occur were the result of bad memory management in the applications we were using. Half of the time we could resolve problems or improve performance for a particular application by tweaking its parameters in the Settings window. Success with this process depends on some luck and a good grasp on the utility's advanced features, but for applications you use regularly, it's worth the effort.

We got the most benefit from applications with well-behaved memory management, whose RAM usage varied depending on the documents opened. For instance, we ran

See RAM Charger, next page



The new Settings window in Jump's OptiMem RAM Charger 2.01 is used to control all of the utility's features and to adjust memory parameters for individual applications.

RAM Charger

From previous page

Microsoft Word 5.1 and Excel 4.0 in 640-Kbyte partitions, yet we could perform such operations as grammar checking that took more than an extra 2 Mbytes of RAM. Claris Corp.'s ClarisWorks operated easily in a 340-Kbyte partition with more than 5 Mbytes' worth of documents open.

Some programs have relatively constant RAM requirements but can still benefit from optimization if you want to keep them inactive in the background. For example, Aladdin Systems Inc.'s StuffIt Deluxe typically requires more than 1 Mbyte of memory to operate, but it can be inactive in less than half that space.

OptiMem works less efficiently when programs hold on to unused memory, making it unavailable to others. Adobe Photoshop, for instance, hogs unused RAM, though it will dispose of it eventually. A few programs simply won't optimize successfully at all. For instance, Nisus Software Inc.'s Nisus Writer and ProVUE Development Corp.'s Panorama insist on grabbing all available memory at start-up and cannot be optimized

Even with OptiMem, programs can't always access all available memory. Requests for a large single chunk of RAM can be filled only if there's a contiguous chunk of that size. If there isn't, OptiMem can at least tell you which application is fragmenting memory, making it possible to free the needed chunk. OptiMem can also keep a configurable amount of RAM free for the system heap, which can further reduce "out of memory" complaints, particularly in the Finder.

Double or nothing?

How does OptiMem differ from RAM Doubler? The answer is both simple and complex.

The simple part is that RAM Doubler works only on machines that support virtual memory, which excludes many older machines, while OptiMem works on any Mac running System 7. And RAM Doubler, when installed, must operate with every bit of code running on the machine. If one program isn't compatible with RAM Doubler, you have to restart without it to run the program. OptiMem can easily be turned on and off for individual applications.

The complicated part is that RAM Doubler gives the Mac effective access to additional RAM but doesn't give an individual application access to RAM outside its partition. Hence, programs must still be launched into partitions large enough for their maximum memory requirements. If the partition is too small, you have to quit, adjust the partition size and relaunch the application. OptiMem doesn't make any more RAM available to the machine, but it allows individual applications access to unused RAM outside their partitions. An application in a small partition need not be relaunched to access more memory.

Which utility is better for you depends on how you use your Mac and what software you use. Most users may prefer the space gain of RAM Doubler, but a sizable minority would be better served with the performance gains of OptiMem. If you want to squeeze the absolute maximum out of your existing RAM, you could actually run both at once.

Documentation and support

OptiMem's documentation is good at explaining the software's more arcane features. Technical support is available via phone and the major on-line services. Also available on-line is a demonstration of the utility that can be converted to the full version by purchasing a serial number.

Conclusions

OptiMem RAM Charger 2.01 is a significant improvement over previous versions, offering much better ease of use, greater control over individual applications' memory parameters and an overall improvement in reliability. Present users should upgrade. Others will find OptiMem more or less valuable depending on just how they use their Macs. For those who need to squeeze the most out of their available RAM, whether or not they're running RAM Doubler, OptiMem provides a simple and unobtrusive way to do it.

OptiMem RAM Charger is available directly from Jump for an introductory price of $59.95. Upgrades from Version 1 are $29.95.

Jump Development Group Inc. of Pittsburgh can be reached at (412) 681-2692; fax (412) 681-2163; jumpdevgrp@aol.com. *— By Loftus E. Becker Jr.*

Aladdin Desktop Tools' Desktop Shortcut utility adds hierarchical menus to the Finder's Open and Save dialog boxes, providing quick access to files you use often.

Aladdin Desktop Tools 1.0

System-enhancement pack delivers with seven utilities

Overall value ◆◆◆

Despite the advanced features and functionality of System 7 and System 7.5, some users find them lacking in basic file-management and desktop functions. Aladdin Systems Inc. has addressed that need with Aladdin Desktop Tools 1.0. A suite of seven System 7.5 utilities that also works with System 7 and System 7.1, the $49.95 ADT is the long-awaited upgrade to the company's ShortCut program.

Positioned as a complement to what might be considered its competitors, Aladdin Desktop Tools can run simultaneously with programs such as Now Utilities from Now Software Inc. Although there is some functional overlap, such as the similarity of Now's Super Boomerang feature and ADT's Desktop Shortcut utility, Aladdin says its program can exist peacefully with other companies' system-enhancement packages.

ADT runs on any Macintosh with 2 Mbytes of RAM and System 7 installed. Standard installation requires 2 Mbytes of free hard disk space.

Finder's helper

Installing ADT adds a number of extensions and control panels to your System folder, an application folder on your hard drive, and the Magic Menu icon to the Finder's menu bar. The latter, which is part of the Desktop Magic Tools utility, adds a list of handy commands to the Finder. If your Mac already has a Magic Menu from another Aladdin product (such as StuffIt), Magic Tools will add a new set of commands to it.

Among Magic Tools' offerings are an extended version of the Finder's Get Info box, a dialog-driven Alias feature and the Copy/Move command. This last feature lets you copy or move files without having to open folders — instead, you select the files and their destination from a dialog box. Copy/Move is particularly useful if your desktop is full of multiple nested folders.

Desktop Viewer, which can be opened from the application icon or by the View command in the Magic Menu, lets you look at, but not modify, a file without opening or even owning the parent application. Five viewer extensions — Word Processing, Graphics, Sounds, StuffIt and Programmer's — give you limited access to a variety of files.

Most viewers let you copy files to the Macintosh Clipboard, save a copy of the file and print. In addition, the Graphics Viewer, which displays PICT and JPEG documents, lets you zoom in and out of the graphic. The Sound Viewer, which displays a sound-wave graphic of most standard sound-file formats, lets you play

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sounds and adjust volume and magnification controls. The StuffIt Viewer shows data about an archive and lets you unstuff selected files. The Word Processing Viewer allows you to format text and search for text strings in a word processing or plain-text file.

Viewing files not supported by Aladdin Desktop Tools is more complicated. You must have the proper XTND translators installed for the format of the file you wish to view. If you try to view a document that has neither a translator nor an appropriate viewer extension, Aladdin Desktop Tools displays the Programmer's Viewer, which allows you to view the file's resource and data forks.

Desktop Viewer is a helpful, albeit slow, utility. For instance, although opening a file with the Graphics Viewer was a relatively fast operation on our Quadra 605, attempting to open a 40-page, highly formatted text document in the Word Processing Viewer turned into a study in patience.

Shortcuts and Makeovers

Those accustomed to the often-laborious mechanics of the Finder's Open and Save dialogs will find Desktop Shortcut a welcome addition. The utility adds pull-down file and folder location menus to the Open and Save dialogs in all applications, offering faster access to files. Desktop Shortcut also allows easy access to StuffIt archives; double-clicking a listed file will unstuff and open it.

Desktop Makeover, derived from Victor Tan's SpeedyFinder7 shareware utility, rids the desktop of the Application Can't Be Found dialog box. Instead, Makeover provides a dialog that lets you choose an alternate application to open the problematic file. You can also use this utility to change the desktop's display settings and change or assign keyboard shortcuts for Finder menu commands.

The Desktop SpeedBoost feature, which is also based on SpeedyFinder7, hastens trashing, copying and duplicating functions. The feature increases the amount of memory used by your selected files, thereby moving larger chunks of data in one action than the Finder would. The SpeedBoost control panel lets you choose the amount of memory the utility uses, ranging from 62 Kbytes to 8 Mbytes. You can also choose among standard, enhanced and background copying/trashing. Although users will find this feature quite convenient, they may not even realize it is running because of its discreet nature.

Like QuickDraw GX, sans the heavy RAM requirements, Desktop Printer quickly creates printer icons, which allow for drag-and-drop printing. The icons are also helpful for instantly switching printers and other output devices without using the Chooser.

Desktop Secure Delete makes sure trashed items are not just removed from the disk's directory — this method does not protect them from file-recovery utilities — but it overwrites the files, making recovery virtually impossible.

You can configure all trashed items to be "securely deleted" via the SpeedBoost control panel, or you can manually dispose of selected files by dragging and dropping them on the Secure Delete icon. We recommend the second method, as there is no way to retrieve an accidentally trashed file from the Trash if everything is automatically Secure Deleted.

House of buggin'

With their abundance of control panels and extensions, system enhancement packages are prone to have bugs and cause conflicts with other extensions and applications. ADT has its share.

For example, using the Close box from the Viewer window caused our Mac to crash. Another bug prevented some enhanced alias-handling features in Makeover from working properly. Further, opening the 40-page text document in the Word Processing Viewer crashed our Mac three times out of four. When the document finally did open, scrolling was painfully slow. Aladdin is aware of these problems and is considering issuing an update or a patch on-line.

Documentation and support

Aladdin Desktop Tools' 100-page documentation is well-written and explains the tools adequately. Technical support was hard to access but thorough when we finally got through.

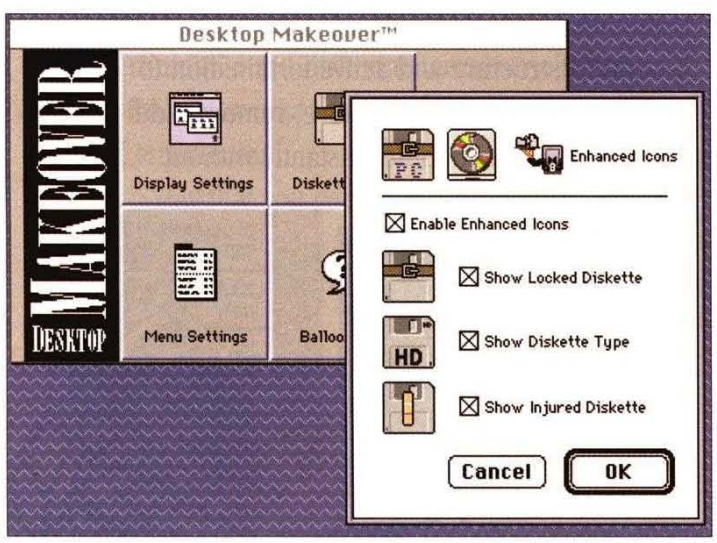
Conclusions

Aladdin Desktop Tools contains several useful utilities that accelerate and help manage many basic operations and Finder functions. With features such as speed enhancements and the capability to copy in the background, you'll certainly find some of the Desktop Tools a welcome addition to your workstation.

Other features blend into the background, such as the enhanced Open and Save menus of Desktop Shortcut. However, the number of bugs is annoying; we look forward to an update. Users leery of potential bug problems may want to look at alternatives, such as Now Utilities.

Users of Aladdin's commercial products, shareware and SpeedyFinder7 can purchase Aladdin Desktop Tools for $39.88. Beginning June 1, Aladdin Desktop Tools will be $89.95.

Aladdin Systems Inc. of Watsonville, Calif., can be reached at (408) 761-6200 or (800) 732-8881; fax (408) 761-6206; aladdin@applelink.apple.com. *— By Ian Stokell*



ADT's Desktop Makeover control panel gives you several options to enhance Finder functions and make your desktop more efficient. For instance, you can have disk icons display various information.

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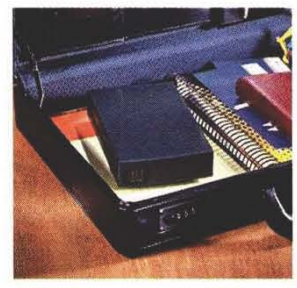

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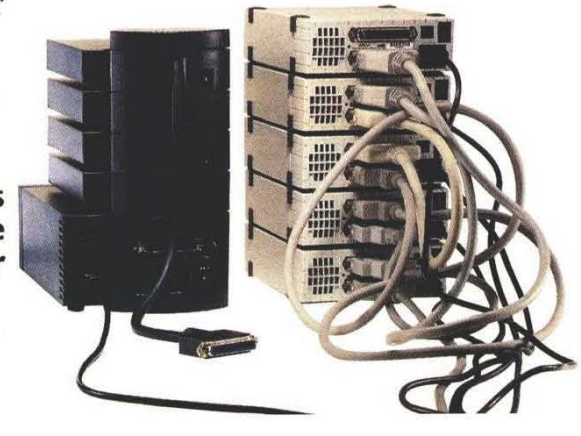

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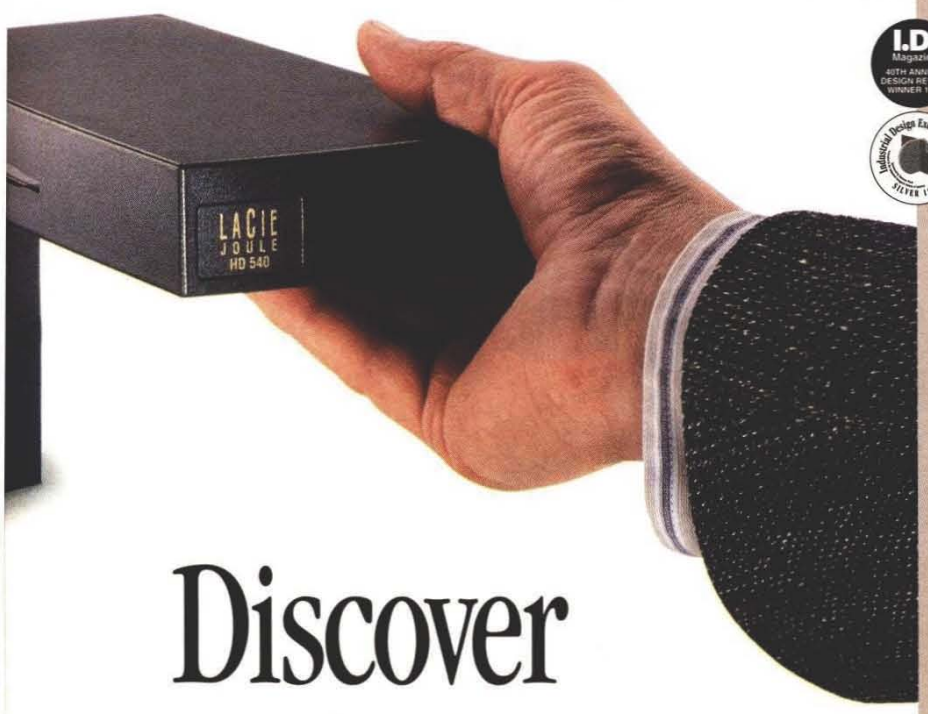

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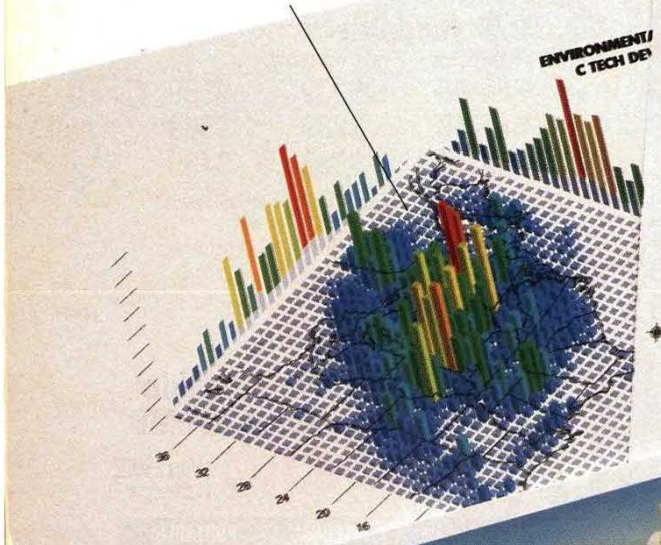

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Color improves recall and recognition performance compared to black and white.
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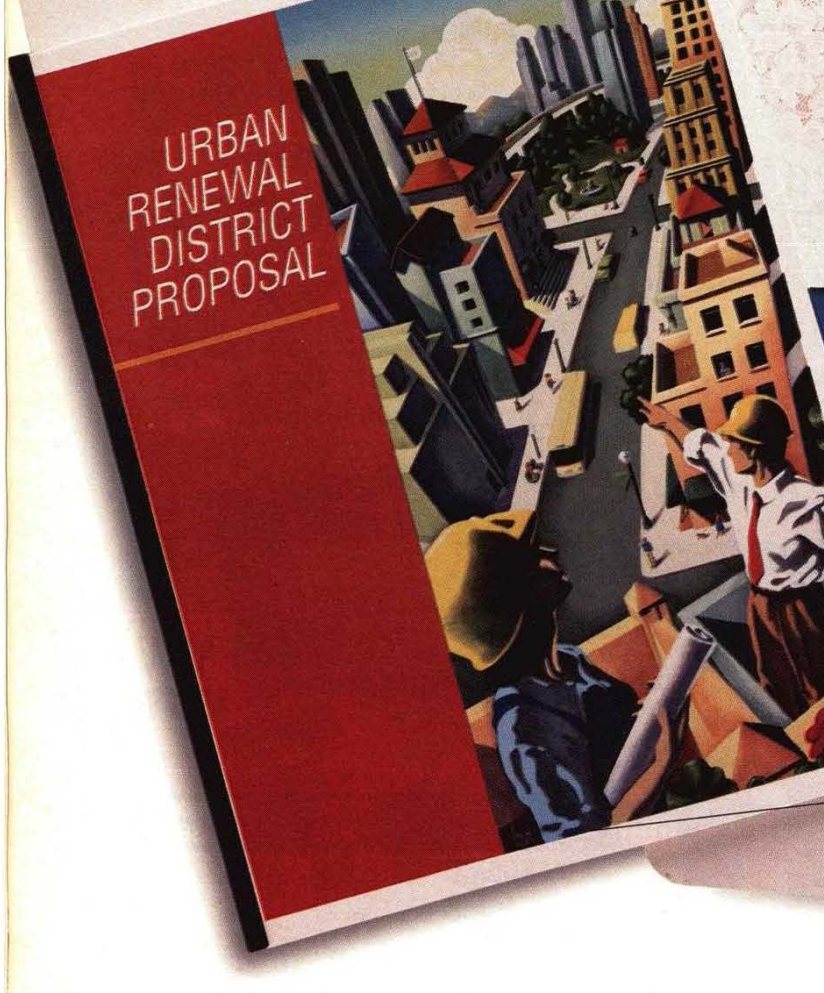
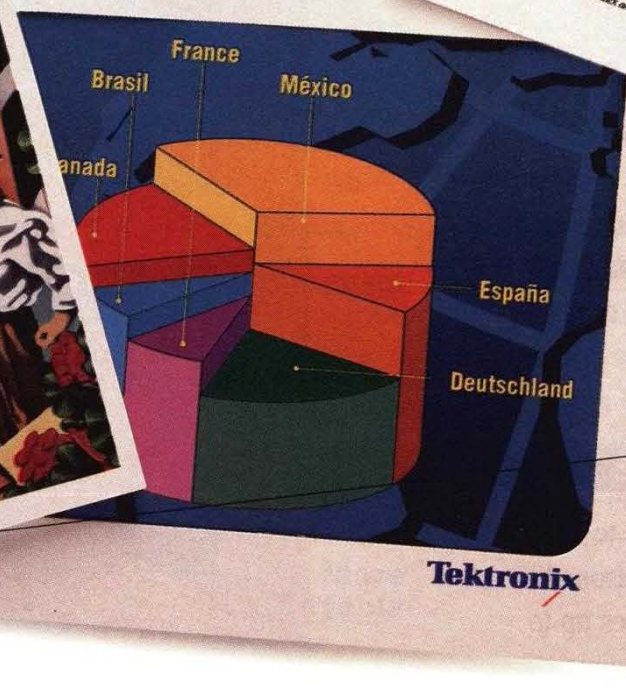
[1] CAER Report No. 110.3A. "Does Color Increase Advertising Reader-ship?". Cahners Publishing Co.
[2] "Update on split run tests on sales effectiveness of BDP color ads #2". Internal report of color versus black and white ads. 1988. Newspaper Association of America.
[3] From a study conducted for the Xerox Corporation by Case & Company. Xerox Public Information Center.
[Borges, et al. "Recall and Recognition of Words and Pictures by Adults and Children," Bulletin of the Psychonomic Society, 1977.]





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*PC Magazine, Nov. 22, 1994, Annual Printer Review.

CANNED MEDIA

Shelf life for CD-ROMs is estimated to be between 10 and 100 years.

— Dataquest Inc.

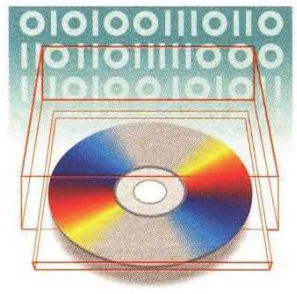
CD-ROM

Record your own with lower-priced 2x CD-R drives

By Eric Taub

CD-ROMs have grown in popularity as a distribution medium, but the inability of the casual user to make recordings easily has limited their usefulness to the distribution of computer games, general consumer titles and productivity software. Now, however, a sudden and dramatic drop in the prices of machines that record as well as read compact discs has started a desktop CD-recording market. Programmers, government agencies, health professionals and others are realizing that CDs are an ideal and economical medium for archival, presentation and in-house training (see MacWEEK, Oct. 31, 1994, Page 43).

CD-Recordable drives are popular, but recording is still complicated for beginners.



The newest generation of double-speed CD-Recordable drives can now be purchased for less than $2,000, about half the price of similarly equipped units three years ago. Analysts predict that by the end of this year, prices will drop to $1,000. In addition, blank CD-ROMs are now priced in the $10-to-$12 range.

As would be expected, the price drop has resulted in a corresponding rise in sales. The CD-R industry shipped 22,000 units worldwide last year, according to Patty Chang, principal analyst for Dataquest Inc. of San Jose, Calif. Although that number is expected to more than triple this year, to 75,000 units, it will still be considered a niche market. "Once we reach 1 million units sold per year, we'll then have a critical mass that will make this a real business," Chang said.

Real or not, recordable drives are saving time and money for some users. Two years ago when Scott Hawthorne, new business development manager for HSC Software Corp. of Carpinteria, Calif., needed to send out a beta version of Kai's Power Tools, the company's graphics package, he sent it out on floppy disks. Then Hawthorne decided to switch from floppies to CD-ROM. Not only did he decrease the sheer bulk of his mailings, but with the huge storage capacity of the CD medium (640 Mbytes, or the equivalent of 450 high-density floppy disks), Hawthorne was now able to include large amounts of sample photographs along with his programs. "We don't have time to send out our work to be written to a CD," Hawthorne said. "With our own Philips CD-Recordable unit, we can create a master in just a few hours."

The current double-speed CD-R drives available for less than $3,500 include MicroNet Technology Inc.'s Master CD Plus, JVC Information Products Co. of America's Personal Archiver, Eastman Kodak Co.'s PCD Writer 225, Philips Laser Magnetic Storage's CDD522, Pinnacle Micro Inc.'s RCD-1000, Smart and Friendly Co.'s CD-R 1002 and DynaTek Automation Systems Inc.'s CDM 200.

Not just drag-and-drop

With prices dropping to affordable levels, Dataquest's Chang said she believes that sales will now be stalled only by the relative complexity of using the units. Recording data onto a CD-ROM is not like copying files onto a floppy or hard disk.

Most CD-R units come bundled with premastering software, which is required on all CD-R drives. The software is sold separately and can generally be used with other manufacturers' drives.

Incat from Campbell, Calif.-based Incat Systems Software USA, which starts at $395, and QuickTopix from Los Gatos, Calif.-based Optical Media International, which sells for $995, test the data before and after it is written to disc. Within the past few months, new, easier-to-use programs that more closely follow the Macintosh interface have become available, such as the $695 Toast from Karlsruhe, Germany-based Astarte GmbH; the $199 Vulkan from Aachen, Germany-based CeQuadrat GmbH; Gear, which starts at $299, from Elektroson USA of Bala Cynwyd, Pa.; and the $795 CD-It!All from OptImage Inc. of West Des Moines, Iowa. These programs allow for faster and less-troublesome mastering. Yet creating a CD is still far from a straightforward process.

Since CD recording is a write-once technology, it is essential that careful attention be given to the content and sequencing order of the information to be mastered. If a mistake is made, then the entire disc must be re-created from scratch.

Many of the newest drives support disc-at-once, track-at-once and multisession recording. The latter method allows the operator to divide the recording time into segments and write data in multiple sessions.

Furthermore, every session in a multiple-session recording requires a separate directory to be written to disc. Each directory consumes 15 to 50 Mbytes of disc space, according to Rich Bowers, executive director of the Columbus, Ohio-based Optical Publishing Association. "Archiving data is not something you can do casually," Bowers said. "You must be organized and have your data properly managed before you start."

Tetragon Inc. of Richardson, Texas, needed to make a CD-ROM demo of its Gridders title for the Consumer Electronics Show in the winter of 1994. The game maker, which creates titles for the 3DO plat-

See Solutions, next page

Double-speed CD-Recordable drives

COMPANY	PRODUCT	PRICE	BUFFER SIZE	BUNDLED SOFTWARE
DYNATEK AUTOMATION SYSTEMS INC. Bedford, Nova Scotia (902) 832-3000 or (800) 461-7078	**CDM 200**	$1,695	1.2 Mbytes	DiscMaster
EASTMAN KODAK CO. Rochester, N.Y. (716) 724-4000 or (800) 235-6325	**PCD Writer 225**	$2,850	2 Mbytes expandable to 8 or 32	Toast
FWB INC. Menlo Park, Calif. (415) 325-4392	**hammerCD-R**	$1,899	1 Mbyte	CD-ROM Toolkit, Toast, CD-R blank disk
JVC INFORMATION PRODUCTS CO. OF AMERICA Irvine, Calif. (714) 261-1292	**Personal Archiver** **Personal ROM Maker**	Pricing starts at $1,795 Pricing starts at $3,295	1 Mbyte 1 Mbyte	Personal Archiver n/a
MICRONET TECHNOLOGY INC. Irvine, Calif. (714) 453-6100 or (800) 800-3475	**Master CD Plus**	$1,895	1.2 Mbytes	Toast
OLYMPUS IMAGE SYSTEMS INC. Melville, N.Y. (516) 364-3000 or (800) 347-4027	**Deltis CD-R2/Mac** **Deltis CD-R2/VAR**	$1,795* $1,645*	1 Mbyte 1 Mbyte	n/a n/a
PHILIPS LASER MAGNETIC STORAGE Colorado Springs, Colo. (719) 593-7900	**CDD522**	$2,299	2 Mbytes	Vulkan
PINNACLE MICRO INC. Irvine, Calif. (714) 789-3000 or (800) 553-7070	**RCD-1000**	$1,695	1 Mbyte	RCD Mac, backup utility
PLASMON DATA INC. Milpitas, Calif. (408) 956-9400 or (800) 445-9400	**RF4102**	$2,995	2 Mbytes, expandable to 32	Toast
RICOH CORP. San Jose, Calif. (408) 432-8800 or (800) 955-3453	**RS-1060C**	$1,995	512 Kbytes	CD Print
SMART AND FRIENDLY CO. Van Nuys, Calif. (818) 994-8001 or (800) 959-7001	**CD-R 1002**	$1,829	1 Mbyte	Corel CDCreator, Toast or Gear
SONY ELECTRONICS INC. San Jose, Calif. (408) 432-1600 or (800) 352-7669	**Spressa 9211**	$2,299.95*	1 Mbyte	Corel CDCreator, 10 blank CDs

** Available mid-June.*

MACINTOUCH RIC FORD

Rites of spring include performing PRAM tricks

Parameter RAM is a private playground for Apple engineers. Some of the contents of this battery-backed memory are documented, but most remain a mysterious secret. That may be acceptable when everything works correctly, but PRAM has been implicated in various crashes and installation problems lately. Apple needs to open up and provide some logical explanations because all we have now are magical incantations and a few talismans from third-party programmers.

If PRAM just won't be nice, try resetting it thrice.

One special rite resets PRAM back to its original factory values. Although I have mentioned it several times in this column, people find the procedure hard to remember, and I get frequent questions about how to perform it. Recently, readers passed on a more powerful version of the ritual now being promulgated by the Apple and third-party technical support departments.

The basic procedure is to hold down a special combination of keys — Command-Option-P-R — while powering on the Macintosh and waiting for the start-up sound. The latest recommendation requires holding down the keys until the start-up sound has repeated three more times. (Avoid holding down the *power* key too long because this reportedly triggers a problem on certain Macs, in which a ROM-based debugger dialog appears unexpectedly on the screen at a later time. You can type "G" to make the processor "Go" ahead from its suspended debugging state and continue operating normally.)

After resetting PRAM, check Chooser settings and Control Panels settings, including Color, Keyboard, Mouse, General Controls, Memory, Network, Sound and Startup Disk. With PowerBooks, check the various power-management options, too.

The most thorough, and most difficult, way to reset PRAM is by removing the computer's power cord and the battery on the motherboard that powers PRAM in the absence of normal power. Pushing the power switch a few times and waiting for a half-hour or more should flush everything out, including things you may prefer to retain, such as manufacture date, the number of power-on hours, and the date and time settings. (If the battery that backs up PRAM runs low, all sorts of bizarre problems can occur on the system, and the battery must be replaced. One typical symptom is that the Mac clock changes to strange values between the Mac's zero date of Jan. 1, 1904 and the current date.)

GORDON STUDER

Lucky charms

A freeware utility called TechTool, from MicroMat Computer Systems, offers a much neater alternative to electrical tricks. TechTool claims to thoroughly clear all of PRAM after saving important settings to a file on disk.

The utility also provides a button for rebuilding the Mac's invisible desktop files, and it lists many details about the system's operating system and hardware. TechTool 1.0.6 is available from standard freeware sources, and you can reach MicroMat at micromat@eworld.com.

Matthias Wuttke's PRAM-Reader 1.1 is also freeware. PRAM-Reader simply saves the full contents of PRAM to a disk file or restores PRAM from the file. It is useful for saving a clean copy of your settings after you go through the lengthy process of clearing PRAM and reconfiguring everything. Once you have the file, you can quickly restore from it whenever a PRAM problem is suspected. Source code is available from Wuttke at wuttke@stein.teuto.de.

An article in Apple's Tech Info library documents a special quirk of PRAM in the Macintosh 630 models (see "Macintosh 630 Family: Three Methods for Zapping PRAM"). In these Macs, one is supposed to push "a red button near the SCSI connector on the logic board" whenever the logic board is removed and replaced.

When swapping NuBus cards in any Mac, it may be important to clear some data out of a special NuBus settings PRAM. Remove NuBus cards and power up the computer once before installing the new card configuration.

Shutdown management

A reader dropped me a note about the tip for removing System 7.5.1's power-key shutdown feature (see MacWEEK April 17, Page 31). Removing the gpch resource from the System 7.5 Update enabler apparently removes a whole set of patches to Apple's Shutdown Manager routines, too, dropping Shutdown Manager back to the System 7.5 level. With luck, we might see a better alternative in the future, such as a check box like the one provided to disable keyboard layout switching. □

Comments on MacInTouch are welcome at 7 Parmenter Ave., Maynard, Mass. 01754. Phone (508) 897-2621. Please address e-mail to 72511,44 on CompuServe or ricford@macintouch.com on the Internet. The MacInTouch home page is at http://www.macintouch.com/~ricford/.

SOLUTIONS

From previous page

form, had one week left before the show when company president Mark Skaggs bought a $3,500 Kodak double-speed CD-R unit. He burned a test copy of the game in time for the show. "Now we make between 20 and 30 CD masters every week," Skaggs said. "With the new generation of premastering software, everything is familiar. Now I feel just like I'm working on a Mac."

With prices of hardware and media at low points, the CD-R market is ready to open up to other professionals, such as doctors, lawyers, accountants and government agency officials who need a stable, virtually indestructible and inexpensive method of archiving data. Corporate executives who create slide presentations will find that encapsulating images on a CD-ROM is less expensive than making hundreds of transparencies.

Kevin Kent, owner of Irvine, Calif.-based Inspired Arts, needed to figure out an efficient method to share his company's video clip-art software between its developers in two California cities. "We had our audio tracks in Irvine and other audio and video in Santa Cruz," he said. "We thought about creating working discs on optical media, but they cost $100 to $150 a pop." Instead, the company decided to work with recordable CD-ROM drives; it purchased a single-speed Pinnacle Micro CD-R drive at the end of 1993 and then bought its second unit, Pinnacle's double-speed RCD-1000 model, at the beginning of this year.

With each CD-ROM costing $10, Kent has been able to readily justify the expense. "If we went to a service bureau to create our CDs, we'd be spending $100 for each one. We've already gone through 100 versions of our new offering. Therefore, if we hadn't made them ourselves, we would have spent $10,000."

The excuse that files have become lost or damaged will no longer be heard.

The permanency of this technology has important legal ramifications. Once information is embedded on a CD-ROM, the excuse that files — whether legal documents, tax information or transcripts of telephone conversations — have become lost or damaged will no longer be heard.

"CD-ROMs [are] a perfect application to be used by phone utility companies that need an efficient way of transmitting bills to large corporate customers," Dataquest's Chang points out. "Banks could use the technology to encode canceled checks. Then the [disc] rather than the paper could be sent to customers."

Most CD-R systems require a dedicated hard drive. Retailers advise that the unit should have at least a 1-Mbyte buffer; anything smaller than that creates the danger that once the drive stops to recalibrate, the buffer may lose its data and the session will have to be restarted from scratch with a new disc. Otherwise, most CD-R drives offer similar features and reliability in their price range. As a result, it's the quality of the software that should often become the deciding factor in a purchase.

"Make sure that the software is easy to use and has a graphical interface," Bowers said. "Use a program that lets you drag and drop different files to get them into the disc-writing queue."

John Roure, head of CD-R sales for Arlington, Texas-based An Optic Solution Inc., said, "Ask your salesperson which CD-R software generates no telephone support calls, and consider that package carefully." Roure also suggests that a package be purchased that records in the formats of Red Book video, ISO 9660 and Mac HFS, as well as audio formats and multisessions. "A CD recorder is like a lock, and it's only as good as the key — the software — which can open up that lock," Roure said.

Buyer beware

There are other caveats to consider when purchasing a CD-R drive. Testing can be difficult because what appears in the directory may not have been accurately written to the disc; therefore, you can't be sure that everything you've archived is safe without opening all the files. Also, while the medium itself simulates real CDs, it can be degraded by heat, thus damaging what's been recorded. Some of these issues may be moot as the newer CD-Erasable technology emerges.

For now, CD-R units are becoming more popular, and new manufacturers are expected to enter the market. By next year, Roure predicts, CD-R prices will drop to the $600 range. And Optical Publishing's Bowers said that "once the Internal Revenue Service accepts CD-R as an archiving medium, that's when this technology will take off." □

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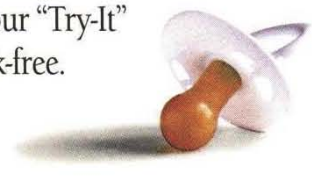

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Times meets digital deadline

By going digital, the L.A. Times Washington edition is in Bill Clinton's hands at 6 a.m.

By Patt Jensen

Putting out the Los Angeles Times on a daily basis is a daunting task. The Pulitzer Prize-winning newspaper has a daily circulation of 1.1 million that leaps to 1.6 million on Sundays; more than 5,000 pages are printed per week.

Yet until last year, it was produced entirely on old-fashioned paste-up boards. Then, via analog satellite transmission, high-resolution production faxes of the boards were sent to three different facilities. Now the newspaper is converting to a Mac-based system.

"The challenge was to harness the best technology on the desktop in standard-platform and off-the-shelf software and knit together digital processes that would make assembly of pages ... an easier, more economical task," said Terry Schwadron, deputy managing editor. "For us, the essence of pagination is the ability to go digital in as many of our processes as possible. ... If you think of a task as being the assembly of the front page, you can see how many people might need to be involved in that process. We saw the answer as being database links that allow us to track the various elements of a page."

JOSEPH PUGLIESE

Assistant news editor Nick Cuccia and copy editor Virginia Tyson are now able to make copy changes more easily on their Mac-based system.

When the Times went into the marketplace, however, Schwadron found that few vendors were prepared to fill those needs.

Worst-case scenario

The Times targeted its Washington, D.C., edition for the pagination experiment. Traditionally, this edition was faxed via satellite to Bel Air, Md., which resulted in generational loss of quality, particularly with art and photography.

The Washington edition is a mirror of everything that gets created in Los Angeles. "We wanted to try a worst-case scenario," said Wayne Parrack, director of editorial systems.

In its initial pagination pilots, the Times tried two different software combinations: The first was QuarkXPress, from Denver-based Quark Inc., teamed with editorial-management software from Managing Editor Software Inc. of Jenkintown, Pa.; the other was QuarkXPress and Interactive News Layout from Sacramento, Calif.-based System Integrators Inc. Neither combination could achieve the different styles and designs that are used throughout the newspaper.

For the past year the Times has been working with Digital Technology International of Orem, Utah, which creates software for newspaper publishing. Each of DTI's software products falls into one of six areas, such as editorial, display advertising and pagination, and runs on Mac clients with Sun SPARCstation servers.

Interaction

All of DTI's programs, or modules, are designed to interact with each other through Sybase SQL databases, which reside on the servers. Any DTI application on the network can access data from any DTI database. The databases have large capacities; for instance, the Times puts more than 1,000 pictures a day into the graphics database and archives about 150.

The process lets editors see exactly what they are doing. "You can create templates for each page and plan what the paper will look like," said Nick Cuccia, assistant news editor. "Our jobs are denser now. We've gone from being editors to being typesetters and compositors."

Typically, DTI's SpeedPlanner module is used for the dummy, which is the initial plan of the page. Editors can work simultaneously on stories as well as access database information, such as past stories or statistical data.

A reporter in the field can write a story using a standard word processing package then transmit it by modem into the system. The story can then be accessed by staff members with editing or read-only privileges. Other text, which is still generated on the paper's old SII terminal system, is then flowed into DTI's PageSpeed, the composition module.

Stories and photos in the databases are tagged by 40 to 50 discrete pieces of information, such as captions, slugs, subjects and header data. Anyone with rights can then reference the photos or data by any one of those tags.

"There was initial anxiety regarding the new technology," Parrack said. "It required a lot of training at a time when editors still had to get the product out."

The Times decided to go into parallel operations until staff members were confident enough to use the software reliably each night. The staff produced live pages for almost eight weeks before they actually used one.

"We're now electronically assembling all elements of the Washington edition — stories, images, graphics and house ads," Schwadron said. The newspaper has been transmitting the completed pages from desktop to the printing site on a fractional T1 line. This process saves up to two production hours a day and also costs less.

"We're saving $180,000 a year in black-and-white-photo supplies," now that photos are digital and not initially output as prints, said Matt Randall, photo department manager.

Dave Rickley, production editor, said: "We'll save money over time. You can see what it looks like and make revision after revision. ... Newspapers are under constant pressure to look at how they're operating."

The Times plans to expand to pagination and live pages throughout all its editions.

Before pagination, and because of time differences, the Times was arriving to Congress as late as noon. Now the Washington edition is usually printed by 3 a.m. The paper is delivered to President Clinton by 6 a.m. "We've gotten good feedback and better visibility," Cuccia said. "We're being read." □

Los Angeles Times

LOS ANGELES

PROBLEM: To move production from paste-up to digital pagination.

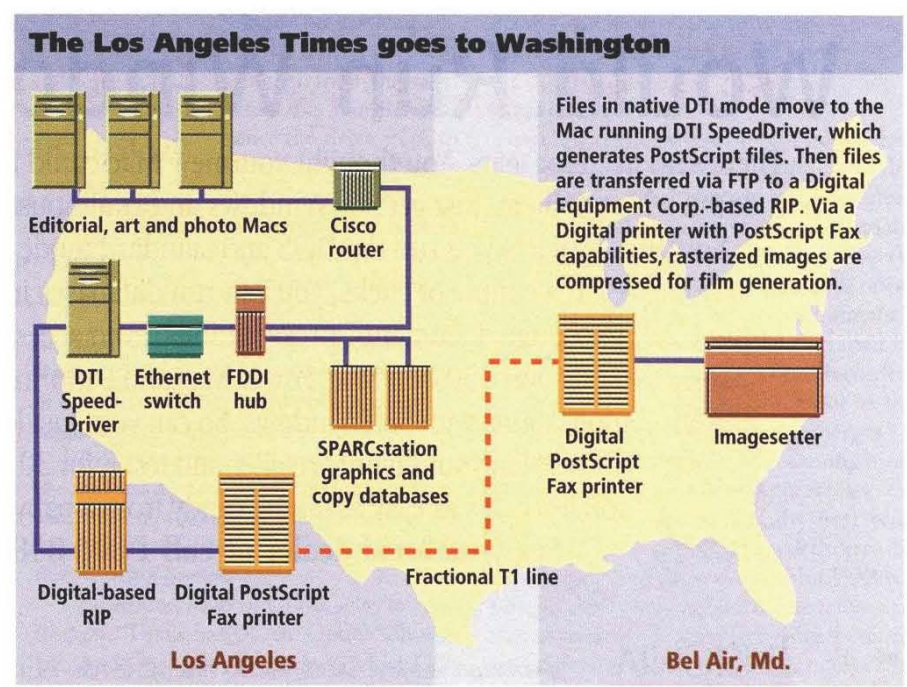
SOLUTION: Producing its Washington, D.C., edition with Digital Technology's pagination system.

RESULT: Delivering the Washington edition at 6 a.m. instead of noon.

COST: $1 million for equipment (including software and servers but not Macs).

SAVINGS: $180,000 per year in black-and-white-photo materials; $500,000 per year by eliminating fax transmission.

The Los Angeles Times goes to Washington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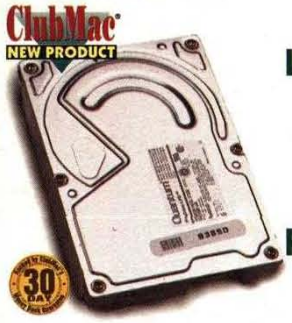

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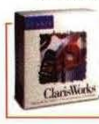

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All Quantum Drives carry a 30-Day Money Back Guarantee. Quantum Maverick, Lightning, Empire, and Atlas series include a TWO Year Warranty. Quantum Daytona series include a ONE Year Warranty.

ClubMac 5.25" 200MB Removable

NEW! Read, Write and FORMAT Compatible with 200MB, 88MB, and 44MB Cartridges.

FEATURING SyQuest® REMOVABLE TECHNOLOGY

$478 C109 1003

INCLUDES FREE CARTRIDGE

NOW SHIPPING WITH ACTIVE TERMINATION

MacUser ★★★★ February 1995

Backed by ClubMac 30 DAY Money Back Guarantee

C109 1003 **5.25" ClubMac 200MB** *includes FREE Formatted 200MB Cartridge*..... External $478

C109 1002 **5.25" ClubMac 88MB** *includes FREE Formatted 88MB Cartridge*..... $349

All SyQuest drives include SCSI Director formatting software, ONE FREE Formatted Cartridge, necessary cables for "plug-and-play" and documentation. All SyQuest drives include a 30-Day Money Back Guarantee and TWO Year Warranty. All SyQuest cartridges include a FIVE Year Warranty (warranty after the first year is handled by SyQuest).

ClubMac 3.5" 270MB Removable

- Fast 13.5ms average seek time
- 3,600 RPM rotational speed
- Data transfer rate up to 4MB/sec (sync)
- SCSI-2 interface
- Backward compatible with 105MB cartridges
- 100,000 hours MTBF

NOW SHIPPING WITH ACTIVE TERMINATION

$479 C109 1004

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FREE CARTRIDGE

C109 1004 **3.5" ClubMac 270MB** *includes FREE Formatted 270MB Cartridge*..... External $479

ClubMac 3.5" 105MB Removable

- Fast 14.5ms average seek time
- 3,600 RPM rotational speed
- SCSI-2 interface
- Data transfer rate up to 4MB/sec (sync)
- 100,000 hours MTBF

NOW SHIPPING WITH ACTIVE TERMINATION

$259 C109 1005

Backed by ClubMac 30 DAY Money Back Guarantee

FREE CARTRIDGE

C109 1005 **3.5" ClubMac 105MB** *includes FREE Formatted 105MB Cartridge*.. External $259

SyQuest 5 YEAR Warranty* ON CARTRIDGES

GENUINE SYQUEST CARTRIDGES

Part Number	Media	Qty 1	Qty 10	Qty 20
S198 1010	44MB	$43ea	$42ea	$41ea
S198 1011	88MB	$48ea	$47ea	$46ea
S198 1012	200MB	$76ea	$74ea	$72ea
S198 1013	105MB	$55ea	$53ea	$51ea
S198 1014	270MB	$62ea	$61ea	$60ea

* Warranty after first year, handled by SyQuest.

NEC

NEC MultiSpin 2V

$199 N024 1008

2X Speed

- Power Tray
- 320ms access time
- 300KB/sec transfer rate
- Two Year Limited Warranty

NEC MultiSpin 6Xe $559

NEW PRODUCT

N024 1062

6X Speed

- Blazing 900 KB/sec
- 150ms access time
- Removable disc cartridge included
- Two Year Limited Warranty

N024 1062 **NEC MultiSpin 6Xe**..... $559

N024 1011 **NEC MultiSpin 3Xp**..... $379

N024 1008 **NEC MultiSpin 2V Mac**..... $199

ClubMac 4X CD-ROM

- 600KB/sec data transfer rate
- 190ms average access time
- Caddy-less design
- LED light, headphone jack and RCA jacks
- CharisMac's CD AutoCache driver software
- ONE Year Warranty

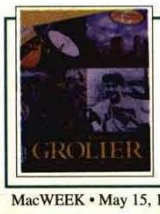
$249 C109 9546

PhotoCD™ CD AutoCache Backed by ClubMac 30 DAY Money Back Guarantee

ClubMac 2X CD-ROM

- 300KB/sec data transfer rate
- 320ms average access time
- Caddy-less design
- LED light, headphone jack and RCA jacks
- CharisMac's CD AutoCache driver software
- ONE Year Warranty

$159 C109 9543



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- QuickShot speakers & Koss Headphones (5 Titles/4 CDs)

CLUBMAC CD-ROM BUNDLE $100* C109 1015

* with any CD-ROM Drive purchase

Seagate

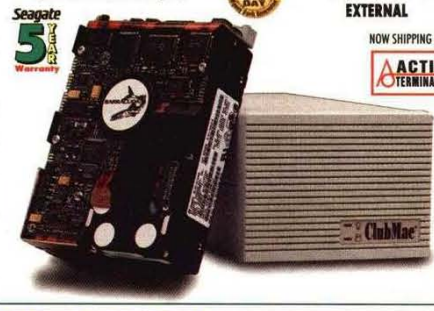
Unformatted Capacity	Model	Description	Part No.	Internal	Part No.	External
3.5" Half Height & Low Profile (LP)						
2.4GB	32430N	Hawk 2 LP	C109 2211	$959	C109 2112	$1019
4.3GB	15230N	Hawk 4	C109 2212	$1339	C109 2113	$1399
2.5GB	32550N	Barracuda 2 LP	C109 2203	$1089	C109 2109	$1149
4.3GB	15150N	Barracuda 4	C109 2207	$1559	C109 2106	$1619
5.25" Full Height						
9.1GB	410800N	Elite-9			C109 2110	$3099

4.3GB BARRACUDA 4 $1619 EXTERNAL

8.5ms average seek time
7,200 RPM rotational speed

Seagate 5 YEAR Warranty

NOW SHIPPING WITH ACTIVE TERMINATION



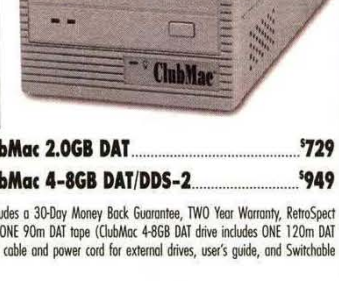
ClubMac Tape Backup Drives

The ClubMac 2.0GB DAT drive features 20sec average data access time, up to 266KB/sec data transfer rate, SCSI-1/SCSI-2 interface and 60,000 hrs MTBF.

NOW SHIPPING WITH ACTIVE TERMINATION

$729

BUNDLED WITH Retrospect v2.1 Backup Software



Backed by ClubMac 30 DAY Money Back Guarantee

C109 5011 **ClubMac 2.0GB DAT**..... $729

C109 5010 **ClubMac 4-8GB DAT/DDS-2**..... $949

ClubMac DAT drives includes a 30-Day Money Back Guarantee, TWO Year Warranty, RetroSpect v2.1 Backup Software, ONE 90m DAT tape (ClubMac 4-8GB DAT drive includes ONE 120m DAT tape), 25/50 pin SCSI cable and power cord for external drives, user's guide, and Switchable Active Termination.

ClubMac Optical Drives

ClubMac 5.25" OLYMPUS 1.3GB

- 29ms ave. seek time
- 3,500 RPM rotational speed

$1499 C109 5022

Backed by ClubMac 30 DAY Money Back Guarantee

NOW SHIPPING WITH ACTIVE TERMINATION

CLUBMAC 3.5" OLYMPUS 230MB

- 28ms ave. seek time
- 4,200 RPM rotational speed

MacUser ★★★★ February 1995

$579 C109 9352

Backed by ClubMac 30 DAY Money Back Guarantee

ClubMac drives are preformatted and thoroughly tested. ClubMac Optical drives include a 30 Day Money Back Guarantee, ONE Year Warranty, a FREE formatted optical disk, SCSI Director Formatting Software, pre-loaded Apple system software, 25/50 pin SCSI cable and power cord for external drives, user's guide, and Switchable Active Termination.

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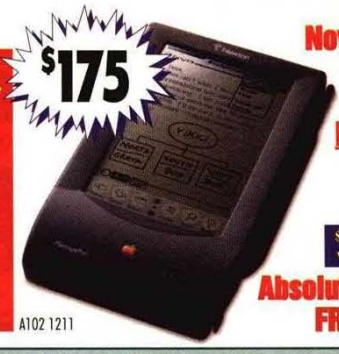

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17" MultiSync XV17	(N026 1022) / **XP17** (N026 1009)	$759 / 1229
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IntelliColor Display/20e

The Radius IntelliColor Display/20e is part of the next generation in professional two-page color displays. It delivers unrivaled command of your desktop, from on-the-fly resolution switching to state-of-the-art color temperature control. Combined with Radius' IntelliColor software, it allows you to emulate 3 lighting conditions and user-adjustable color temperature, so you get more accurate color representation.

$1979

MONITORS

R016 1013	**PressView 21T Display System** (PV2102) 21" Trinitron, 640 x 480 to 1600 x 1200	$3129
R016 1016	**SuperMatch 21•T XL Trinitron** (STD2102) 21" Trinitron, 1600 x 1200	$2139
R016 1009	**IntelliColor Display/20e** (0461) 20" Trinitron, 640 x 480 to 1600 x 1200	$1979
R016 1007	**PrecisionColor Display/17** (0460) 17" Trinitron, 640 x 480 to 1600 x 1200	$989
R016 1015	**SuperMatch 17•T PRO** (STD1702) 17" Trinitron, 1360 x 1024	$829

VideoVision Studio 2.0

With JPEG hardware compression and decompression for full-screen, full-motion recording and playback from a hard disk, VideoVision Studio combines the power and flexibility of the Macintosh with the ease and transportability of video tape.

$3699

PowerMac 8100 Compatible !!

MULTIMEDIA SOLUTIONS

R013 1018	**VideoVision Studio 2.0** (0500) NEW and IMPROVED, now compatible with the PowerMac 8100	$3699
R013 1020	**VideoVision Studio 2.0 Upgrade** (0505) JPEG daughtercard	$1759
R013 1026	**Spigot Power AV** (DV1630) captures full-screen 24-bit color video up to 30 frames/60 fields per sec.	$759

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Blow the doors off Power Mac

Three Thunder IV GX cards extend the 24-bit resolution of the PowerMac's built-in-video. Accelerated 24-bit color, built-in Photoshop acceleration, CMYK acceleration, hot-key resolution switching, pan and zoom, color composer and 10-bit DAC add up to make these cards the number one choice for image processing, compositing and illustration.

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Adobe charged

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R013 1061	**Thunder IV GX•1152** (0485) 24-bit support 1152 x 870	$1899
R013 1062	**Thunder/24 GT** (0491) 24-bit support to 1152 x 870, PhotoEngine optional	$1399
R013 1010	**PrecisionColor Pro 24XK** (0430) 24-bit color, 1024 x 768, 16" and larger displays	$749
R013 1012	**PrecisionColor Pro 24XP** (0431) 24-bit color, 832 x 624, 17" and smaller displays	$279

*Modify your image display without affecting the image file. For a limited time, FREE ColorComposer software is included with each Thunder Series card. Adjust what you see on your monitor to more closely match the output of your printer.

Printers

NEC

PostScript

BEST BUY

NEC Silentwriter Model 640

- 6ppm Print Speed
- 300 dpi print resolution
- 35 True Type fonts
- 3MB RAM standard
- AppleTalk Interface
- Adobe PostScript Level 2 interpreter
- Limited TWO-Year Overnight Replacement Warranty (N027 1001)

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Stylus COLOR Inkjet Printer E047 1012

Now you can print in vivid color with clarity never before possible in a personal color printer. At 360 dpi resolution blacks are blacker and at 720/360 dpi the color output is the sharpest available.

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HP ScanJet 3c

The HP ScanJet 3c Color/Grayscale flatbed scanner for just $959. It offers 600 dpi, 30-bit color internal, and 10 bit grayscale internal capabilities for superior image quality. And it provides an easy way to add text and color images to documents.

$959

H045 1006	**HP ScanJet 3c Color/Grayscale Scanner**	$959
H045 1004	**HP ScanJet 3p Grayscale Scanner**	$479
H040 1007	**HP ScanJet 3c Automatic Document Feeder** (up to 50 pages)	$479
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1994 MACWORLD EDITORS' CHOICE AWARD WINNER

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Global Village TelePort Platinum

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G050 1016	**Global Village TelePort Platinum**	$229
G050 1006	**Global Village TelePort Gold II**	$139
G050 1017	**Global Village PowerPort Platinum PB 1XX**	$325
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28.8 MC v.34

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The EAsycolor 24 graphics accelerator offers an unsurpassed combination of performance and price to creative professionals. In addition to 24-bit resolution up to 1600 x 1200, the EAsycolor 24 also offers Adobe Photoshop, CMYK-RGB, and QuickDraw Acceleration. Ideal for PowerMac owners, the EAsycolor 24 features state of the art RISC technology, up to 8MB VRAM, a 30 day money-back guarantee and a lifetime warranty at a very competitive price.

$1299

E103 1001	**EAsycolor 24 1152 Graphics Card** (EC1152)	$1299
E103 1002	**EAsycolor 24 1360 Graphics Card** (EC1360)	$1499
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PaintBoard Prism GT bundled with Painter 3.0

Prism delivers top performance – real-world performance – for the way that people really work. Prism provides a balance of price, performance and functionality that are unmatched

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NEW PRODUCT

R053 1029	**PaintBoard Prism GT bundled with Painter 3.0**	$959
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100MHz

Compatible with Mac IIci, IIsi, IIvx, and Performa 600

The Turbo 601 provides the best of both worlds. The Turbo 601 allows you to run your current software up to twice as fast, and it lets your run powerPC accellerated applications at full PowerPC speed - from 7 to 11 times faster!

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DayStar 66 MHz Turbo 601	Compatible with Mac IIci (D040 1039), IIsi (D040 1049), IIvx/vi/Performa 600 (D040 1051)	$989
DayStar 66 MHz PowerCard 601	(D040 1040)	$635
DayStar Turbo '040	(D040 1018)	$769

Networking

Mac Con LC-10T III

(A120 1026)

Mac Con LC-10T III is a great low cost 10BaseT solution for LCs, Quadra 605s, 630s and many Performa models

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A120 1032	Micro AsantéPrint, 10BT (AP10T)	$285
A120 1033	Micro AsantéPrint, Thk/Thn/10BT (AP3)	$309
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A120 1025	Mac II/Perf 600, NuBus, Thk/Thn (MCiNB-TN)	$95
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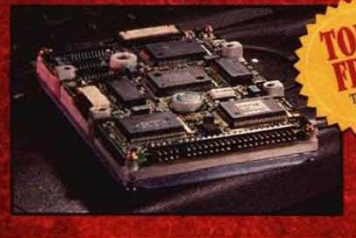

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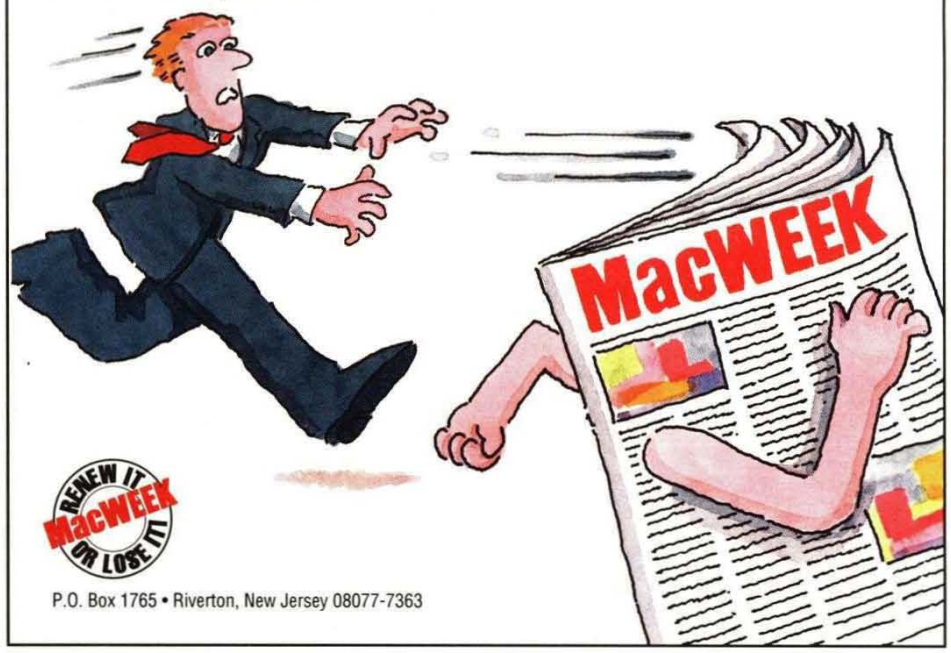

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- Provides ability to easily remove and transport data
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Digital Linear Tape Drives

Quantum DLT

Model	Capacity	Trans.Rate	Media	Ext.
DLT2000	20 GB	2.5MB/sec.	DLT20	$2995
DLT4000	40 GB	3.0MB/sec.	DLT40	$Call!

1 free cartridge with each DLT purchase

These drives are ideal for AV and network backup due to their advanced linear recording technology and a highly accurate tape guide system . DLT allows you to backup 150 to 180 MB per minute. DLT is your high capacity high performance backup solution.

Optical Drives

	Capacity		Access	Warranty	Ext.
Hewlett Packard	1.3 GB	1716T	23.5ms	1 Year	2295
MaxOptics	1.3 GB	Tahitti III	18ms	1Year	2395
Fujitsu	230 MB	M2512	30ms	1Year	575

1 free cartridge with each drive purchase

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Zero Footprint 10.75" x 9.75" x 2" $75
MicroCab 8.5" x 6.75" x 2" $89
Full Height 9.75" x 9.5" x 4.5" $139
Multi Bay Cabinets ..... $CALL
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Nikon	Scantouch	$1199
	Transparency Adapter	$499
	Coolscan	$1399
UMAX	UC630/1260	$675/1240
	Vista S6	$760
	Powerlook	$3250

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8:00am-7:00pm (CST)

Quantum Quantum Quantum

	Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
LPS Series	170 MB	14 ms	3600	128K	2 Year	$135	$195
Maverick	540 MB	14 ms	3600	128K	2 Year	225	285
LPS Series	340 MB	11 ms	4500	128K	2 Year	185	245
DSP3053	535 MB	9 ms	5400	512K	2 Year	225	285
Lightning	540 MB	11 ms	4500	128K	2 Year	239	299
Lightning	730 MB	11 ms	4500	128K	2 Year	259	319
Empire	2100 MB	9.5 ms	5400	512K	5 Year	945	1005
Grand Prix	4200 MB	8.6 ms	7200	512K	5 Year	1465	1525
Atlas Series	1.0 GB	9ms	7200	1024K	5 Year	Call	Call
Atlas Series	2.0 GB	9ms	7200	1024K	5 Year	890	950
Atlas Series	4.0 GB	9ms	7200	2048K	5 Year	1495	1555

	Capacity	Size	Seek	Cache	Warranty	Int.	Ext.
Daytona	256 MB Powerbook	2..5"	17 ms	128K	1 Year	235	305
Daytona	341 MB Powerbook	2..5"	17 ms	128K	1 Year	315	395
Daytona	514 MB Powerbook	2..5"	17 ms	128K	1 Year	415	495

New Products — MICROPOLIS MICROPOLIS — New Pricing!!

	Capacity	Access	RPM	Cache	Warranty	Int.	Ext.
M4221	2.1 GB	8.5 ms	7200	512K	5 Year	980	1040
M4221Wide	2.1 GB	8.5 ms	7200	512K	5 Year	1080	1140
M1936	3.6 GB	11 ms	5400	512K	5 Year	1195	1295
M3243	4.3 GB	8.5 ms	7200	512K	5 Year	1395	1455
M3243Wide	4.3 GB	8.5 ms	7200	512K	5 Year	1495	1555
M1991	9.0 GB	12 ms	5400	512K	5 Year	2195	2295
M1991Wide	9.0 GB	12 ms	5400	512K	5 Year	2295	2395

Direct to Disk Recording AV Drives- BEST for Music and Video Storage

M4221AV	2.1 GB	8.5 ms	7200	512K	5 Year	1035	1095
M1936AV	3.6 GB	11 ms	5400	512K	5 Year	1245	1345
M3243AV	4.3 GB	8.5 ms	7200	512K	5 Year	1495	1555
M1991AV	9.0 GB	12 ms	5400	512K	5 Year	2395	2495
M4221WideAV	2.1 GB	8.5 ms	7200	512K	5 Year	1135	1195
M3243WideAV	4.3 GB	8.5 ms	7200	512K	5 Year	1595	1655
M1991WideAV	9.0 GB	12 ms	5400	512K	5 Year	2495	2595

NEW — MICRODISK LT *3.5"Stackable Disk Subsystems, Super Capacity External Storage*

M2100	2.1 GB	8.9 ms	7200	512K	5 Year	Call for the most
M4200	4.2 GB	8.9 ms	7200	512K	5 Year	competitive pricing

SPRING SPECIALS

Quantum 170MB ..... Int. $135 Ext. $195
3600RPM, 14ms seek, 128K cache, 2 year warranty

Quantum 340MB ..... Int. $155 Ext. $215
4500RPM, 12ms seek, 128K cache, 2 year warranty

Quantum535MB ..... Int. $225 Ext. $285
DSP3053, 5400RPM, 9ms seek, 512K cache, 2 year warranty

Quantum 730MB ..... Int. $258 Ext. $318
Lightning 730, 4500RPM, 11ms seek, 128K cache, 2 year warranty

Conner 1.0GB ..... Int. $475 Ext. $535
CFP1080, 5400RPM, 9ms seek, 5 year warranty

Quantum Grand Prix 2.0GB ..... Int. $890 Ext. $950
Q2100, 5400RPM, 9ms seek, 5 year warranty

Seagate Barracuda 4.0GB ..... Int. $1495 Ext. $1555
ST15150N, 7200RPM, 8ms seek, 5 year warranty

Seagate Seagate Seagate Seagate

	Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
Hawk 2LP	1.2 GB ST31230N	9ms	5400	512K	5 Year	535	595
Hawk 4	4.2 GB ST15230N	9ms	5400	512K	5 Year	1335	1495
Barracuda 2LP	2.5 GB ST32550N	8ms	7200	1024K	5 Year	1050	1110
Barracuda 4	4.2 GB ST15150N	8ms	7200	1024K	5 Year	1495	1555
Barracuda 2Wide	2.5 GB ST32550Wide	8ms	7200	1024K	5 Year	1125	1195
Barracuda 4Wide	4.2 GB ST15150Wide	8ms	7200	1024K	5 Year	1590	1650
Elite 9	9.0 GB ST410800N	11ms	5400	512K	5 Year	2995	3095

FUJITSU FUJITSU FUJITSU FUJITSU FUJITSU FUJITSU

	Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
M2684	530 MB	9ms	4500	256K	5 Year	220	280
M1606SA	1.2 GB	9ms	4500	512K	5 Year	525	585

HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD

	Capacity	Access	RPM	Cache	Warranty	Int.	Ext.
C3323SE	1.2 GB	9.5 ms	5400	512K	5 Year	$585	$645
C2490SE	2.4 GB	8.5 ms	6300	512K	5 Year	1170	1230

SyQuest

Capacity	Seek	RPM	Int.	Ext.
88 MB SQ5110C	20 ms	3200	$305	$365
200 MB SQ5200	18 ms	3200	420	480
270 MB SQ3270	13.5 ms	3200	420	480

2 Year Warranty on all SyQuest Drives. SyQuest drives come complete with 1 cartridge(Formatted or Unformatted) and the latest SCSI 4.3 compatible software

SyQuest Media

Capacity	Model	Warranty	Price
44 MB	SQ400	5 year	$41
88 MB	SQ800	5 year	46
105 MB	SQ310	5 year	50
200 MB	SQ2000	5 year	74
270 MB	SQ327	5 year	63

SCSI-2 Accelerators

Atto

Silicon Express Fast SCSI-2 — 525
SCSI 1 & 2 support,transfer rates up to 10.0 MB/sec,supports multiple block sizes,takes advantage of parallel processing capability by transferring data directly between the Mac RAM and the SCSI bus! Ideal for graphic design,multimedia applications,software design, and more!

Silicon Express 4 Card — 895
Fast/Wide (16Bit) SCSI-2 accelerator card for Apple's Nubus based computers. Supports Fast/Wide SCSI 2 (16 Bit) transfer rates up to 20MB/sec., and fast SCSI-2 (8 Bit) transfer rates up to 10MB/sec. Full 16 Bit WIDE support for the latest drives and disk arrays . Fully compatible with all existing SCSI-1 drives . Formatting software is included. 5 Year Warranty.

Remus RAID Software — Call

Tape Backup Drives

HEWLETT PACKARD

Capacity	Model	Media	Int.	Ext.
2.0 GB	35470	4mm	$935	$985
3-5 GB	35480	4mm	1105	1150
4-10 GB	1533A	4mm	1305	1365
20-50 GB	1553A Auto Tape Loader		3495	3595

Exabyte

Capacity	Model	Media	Int.	Ext.
2-5 GB	8205	8mm	$1395	$1485
7-14 GB	8505XL	8mm	2175	2240

Dat drives include 1 piece of media and Retrospect Software

DeskTape™ Allows you to mount your DAT on the desktop. Backing up your data is as easy as drag and drop!

ProDirect always suggests that our customers backup their hard drives. In the event of hard drive failure, be assured and back up your data with quality tape backup drives from Hewlett Packard and Exabyte.

Memory Products

Memory	Centris,LCIII,Quadra
2x8x80	4MB 60/70ns
4x8x80 60/70ns	8MB 60/70ns
4x8x80 FX	16MB 70ns
16x8x80 Low Profile	32MB 60ns
16x8x80 FX	VRAM 256K/512K

Powerbook Memory
520,520C,540,540C
4MB,8MB,16MB,32MB
140,170,160,165C,180,180C,Duos
4MB,6MB,8MB,10MB, 12MB,14MB,20MB

Lifetime Warranty on all Memory Products!!

Always call for the most competitive pricing on memory.

Best Technical Support

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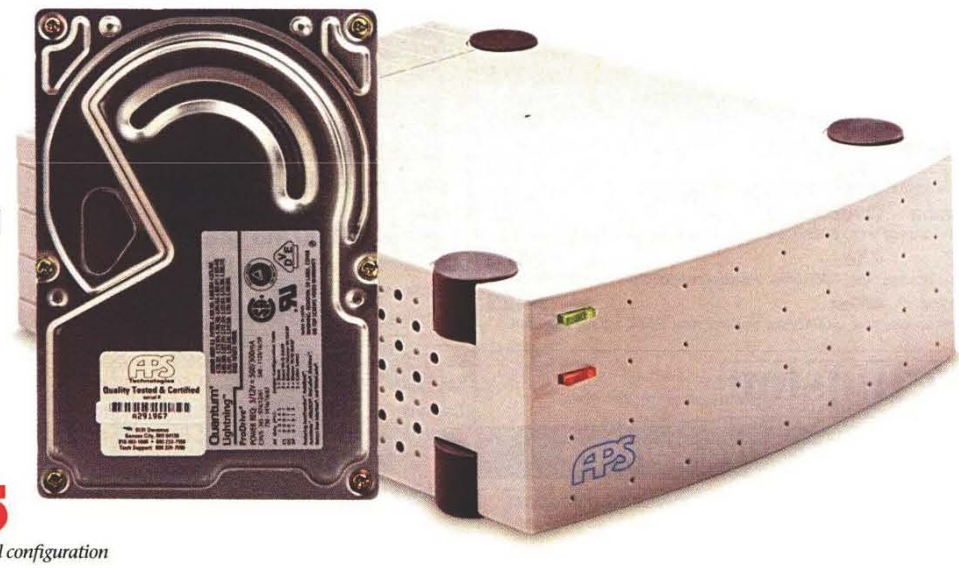
MACWORLD 1993 World Class Award Winner

Get 365MB – Only $159.95

Internal configuration

APS Q 365

- ✓ 350MB formatted capacity
- ✓ 2-year warranty
- ✓ Today's best value for data intensive storage needs



OR GET 730MB – Just $249.95

Internal configuration

APS Q 1.0

$699.95

Internal configuration

7200 RPM!

- ✓ Over 1GB of formatted capacity
- ✓ Transfer rates as high as 4.36MB per second giving you all the performance you need for power-hungry applications

APS MS 2.0

$999.95

Internal configuration

7200 RPM!

- ✓ Fastest 2GB available!
- ✓ 5-year warranty
- ✓ 2GB in a compact 3.5" third-height form factor

APS SCSI HARD DRIVES

349-2047MB

Model	Capacity	Internal	SR2000
APS Q 365[2] Quantum 365 Lightning mechanism	349MB	$159.95	$259.95
New Lower Pricing! APS Q 730[2] Quantum 730 Lightning mechanism	699MB	249.95	349.95
MacUser ZD LABS 4½ APS ST 1.0[5] Seagate ST 31230N Hawk mechanism	1010MB	549.95	649.95
APS Q 1.0[5] Quantum Atlas XP31070 mechanism	1025MB	699.95	799.95
APS Q 2.0[5] Quantum Atlas XP32150 mechanism	2050MB	999.95	1099.95
MacUser ZD LABS 4½ APS MS 2.0[5] Micropolis 4221 mechanism	1955MB	999.95	1099.95
APS ST 2.0[5] Seagate ST 32550N Barracuda	2047MB	999.95	1099.95
APS MS 2.0AV[5] Micropolis 4221AV mechanism	1955MB	1099.95	1199.95

4064-8669MB

Model	Capacity	Internal	SR2000
APS MS 4.0[5] Micropolis 3243 mechanism	4064MB	$1399.95	$1499.95
APS MS 4.0AV[5] Micropolis 3243AV mechanism	4064MB	1499.95	1599.95
MacUser ZD LABS 4½ APS ST 4.0[5] Seagate ST 15150N mechanism	4094MB	1499.95	1599.95
APS MS 9.0[5] Micropolis 1991 mechanism	8669MB	2299.95	*2499.95
APS MS 9.0AV[5] Micropolis 1991AV mechanism	8669MB	2399.95	*2599.95
MacUser ZD LABS 4½ APS ST 9.0[5] Seagate ST410800N mechanism	8669MB	2999.95	*3199.95

PORTABLE DRIVES

Model	Capacity	Internal Only
APS Q 341[1]	326MB	299.95
APS Q 514[1]	491MB	399.95
APS T 504[1]	504MB	399.95
APS T 800[1]	773MB	599.95

DATerm™ patent pending
Copyright © 1995 APS Technologies
Internal drives for Quadra 800 and Centris 610 available
Listed capacities are formatted
Full Height cases include SCSI Sentry FREE!
1-5 Denotes length of manufacturer's warranty in years
** External case is special Full Height only*

NEW FROM APS

APS T 800

$599.95

Internal configuration

APS DISK ARRAYS (Level 0-1)

Model	Capacity	RAID LEVEL	Price
ARRAID S2/5400[5]	2GB	Striped (0)	$1399.95
ARRAID M1/7200[5]	1GB	Mirrored (1)	1599.95
ARRAID S2/7200[5]	2GB	Striped (0)	1599.95
ARRAID M2/7200[5]	2GB	Mirrored (1)	2499.95
ARRAID S4/7200[5]	4GB	Striped (0)	2499.95
ARRAID S8/7200[5]	8GB	Striped (0)	3299.95

ARRAID: Disk Array systems from APS are high performance, easy-to-use disk array storage solutions. ARRAID provides the power, reliability and plug-and-play convenience Macintosh users expect. Available in mirrored or striped configurations up to 16GB, with a 5-year warranty.

ARRAID is RAID Made Easy!

Call for our free catalog of drives and accessories.

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1-800 677-3294 APS Technologies, 6131 Deramus, Kansas City, MO 64120

Fast 4 GB Backup $499.95

External without tape!

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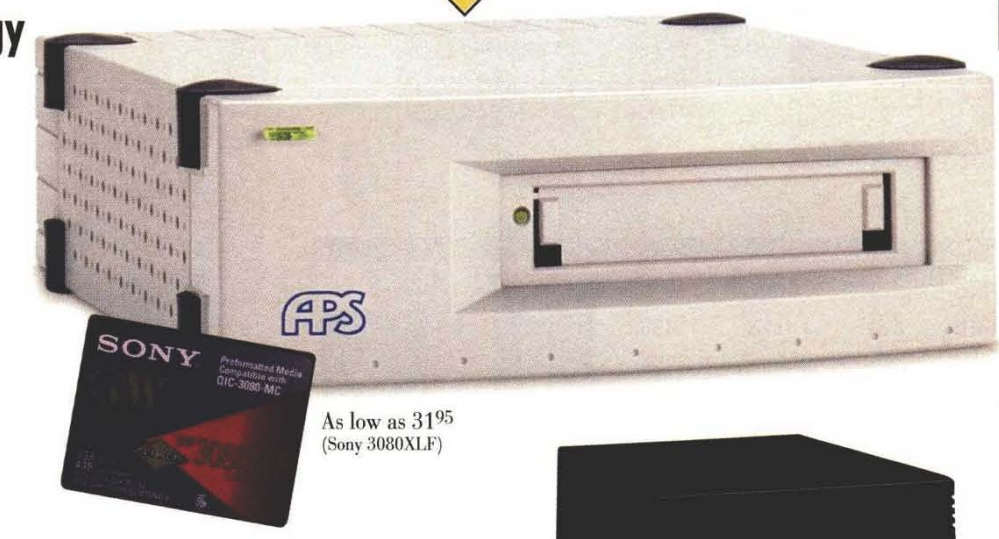
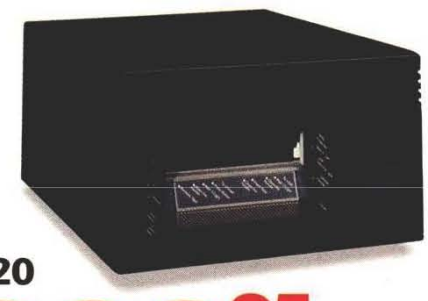
24 x 7

APS HyperTape™

- ✓ Based on newest DC-2000 minicartridge tape technology
- ✓ Highest capacity, fastest tape drive under $500
- ✓ Up to 4GB of storage
- ✓ Backup rates as high as 30MB per minute
- ✓ Includes Retrospect v2.1 software by Dantz **FREE!**



As low as 31.95
(Sony 3080XLF)



APS HyperDAT

$999.95

External configuration with tape!

World Class Winner Macworld

Macworld's 1994 World-Class Award for Alternative Storage goes to the APS line of DAT Drives

APS HyperDAT™

- ✓ Capacity up to 8GB
- ✓ Transfer rates up to 28MB per minute gives high performance storage for high-end users
- ✓ Reliable and flexible storage compatible with DDS and DDS-DC DATs

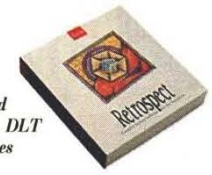
APS DLT20

$3999.95

APS DLT20

- ✓ The new leader for back up speed, reliability and capacity
- ✓ Up to 20GB per tape
- ✓ Up to 110MB per minute

Retrospect included free with all DAT, DLT & HyperTape drives



APS TAPE DRIVES

Model	Capacity*	Internal	External
APS HyperTape[2]	4GB	—	$499.95
APS DAT[2]	4GB	$749.95	799.95
APS HyperDAT[1]	8GB	949.95	999.95
APS DLT20[2]	20GB†	—	3999.95

**Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.*
† 2:1 Hardware data compression

All APS DAT, DLT & HyperTape drives include Retrospect by Dantz

Tape Media	1-4	5-19	Best Value! 20+
3080XLF (HyperTape)	$34.95	$32.95	$31.95
60-Meter	7.95	6.95	5.95
90-Meter	9.95	8.95	7.95
120-Meter (DDS-2)	19.95	18.95	17.95
DLT Data cartridge	45.95	—	—
DLT 3PK cartridges	129.95	—	—

APS REMOVABLES

Model	Capacity	SR2000
APS SQ 3270[2]	255MB	$479.95
APS SQ 5200[2]	194MB†	499.95

† Does not format 44MB & 88MB cartridges
1-5 Denotes length of manufacturer's warranty in years

All SyQuest drives include 1 FREE cartridge

SyQuest Media	1-4	5-9	Best Value! 10+
SQ-400 (44MB)	$44.95	$43.95	$41.95
SQ-800 (88MB)	54.95	53.95	51.95
SQ-2000 (200MB)	84.95	83.95	81.95
SQ-310 (105MB)	59.95	58.95	56.95
SQ-327 (270MB)	64.95	63.95	61.95

Prices listed are for unformatted media

APS CD-ROM DRIVES

Model	SR2000
APS T 3601[1] QUAD-SPEED	$349.95

APS MO DRIVES

Model	SR2000
APS 230MB MO[2] *New Lower Pricing!*	$599.95
APS 1.3GB MO[1]	1999.95

1-5 Denotes length of manufacturer's warranty in years

All MO drives include 1 FREE cartridge

MO Media	1-4	5-9	Best Value! 10+
128MB cartridge	$27.95	$26.95	$22.95
230MB cartridge	39.95	38.95	34.95
1.3GB cartridge	89.95	88.95	84.95

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Global Storage Resource

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- Hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh where applicable. All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software and APS Technologies' APS POWERTOOLS SCSI formatter/hard disk partitioner.
- All external drive products and cases come with a premium 25 x 50 SCSI cable.
- International customers must pay for all shipping charges.
- Toll-free Technical Support hours are 8 am to 8 pm Monday thru Friday, 9 am to 5 pm Saturday, Central Time.
- 30-day money-back guarantee • (Excluding opened software). Your risk is the cost of shipping.
- Drive-for-Drive Repair or Replacement Warranty • The warranty length is denoted by the superscripted number next to each drive model. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
- All prices and specifications are subject to change without notice.
- Refused orders subject to restocking fee.

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HARD DRIVES

Conner 1.2gig. $455.

240MB - 1200MB

BRAND/MODEL	CAPACITY	SIZE	ACCESS	RPM	INTERNAL	EXTERNAL
QUANTUM	514MB	2.5"	14MS		$ 425	
FUJITSU M2684S	530MB	3.5"	13MS	5400	$ 275	$ 339
CONNER CFP1080S LP	1.2GIG	3.5"	9MS	5400	$ 455	$ 515
Hitachi DK326c-10	1.0GIG	3.5"	9MS	6300	$ 585	$ 645
FUJITSU M1606S LP	1.2GIG	3.5"	10MS	5400	$ 555	$ 615
Seagate ST31230N	1.2GIG	3.5"	9MS	5400	$ 585	$ 645

1.7GIG - 9GIG — 5 YEAR WARRANTY

BRAND/MODEL	CAPACITY	SIZE	ACCESS	RPM	INTERNAL	EXTERNAL
Seagate ST12450W	1.7GIG	3.5"	8MS	7200	$ 1495	$ 1555
Conner CFP2105S	2.1GIG	3.5"	9MS	5400	$ 855	$ 915
Conner CFP2107S	2.1GIG	3.5"	8MS	7200	$ 955	$ 1015
Quantum XP32140S	2.2GIG	3.5"	8.6MS	7200	$ 995	$ 1055
Seagate Barracuda 2LP	2.5GIG	3.5"	8MS	7200	$ 1055	$ 1115
Seagate Barracuda 2W	2.5GIG	3.5"	8MS	7200	$ 1139	$ 1199
Seagate Barracuda 4	4.1GIG	3.5"	8MS	7200	$ 1499	$ 1559
Seagate Barracuda 4W	4.1GIG	3.5"	8MS	7200	$ 1595	$ 1655
Conner CFP4207S	4.2GIG	3.5"	9MS	7200	$ 1399	$ 1499
Conner CFP4207wide	4.2GIG	3.5"	9MS	7200	$ 1399	$ 1499
Quantum XP34280S	4.3GIG	3.5"	8.6MS	7200	$ 1685	$ 1785
Seagate Elite 9	9.0GIG	5.25"	11MS	5400	$ 3035	$ 3095

CD RECORDERS

- Multimedia
- Archiving
- Distribution
- In-house publishing
- Back-up
- Image Data handling

- Unprecedented 4X speed
- Multisession
- Selectable Speeds
- Flexible Formats
  - Digital Audio
  - Interactive
  - Read-only
  - Extended Architecture

Yamaha 4 speed recorder

$3395.

"We recommend the Yamaha CDR100"
- MacWorld Mar. '95

MEDIA

128MB Optical	$ 25	60M Tape	$ 10
230MB Optical	$ 29	90M Tape	$ 12
1.3GIG Optical	$ 85	112M Tape	$ 15
10 Pack CD's	$ 99	120M Tape	$ 20
88MB Squest	$ 48	200MB Syquest	$ 76
105MB Syquest	$ 54	270MB Syquest	$ 61

Our top rated RAID Systems include an Atto accelerator card, Remus RAID software, and all cabling.

RAID SYSTEMS
FROM 1 TO 84 GIG

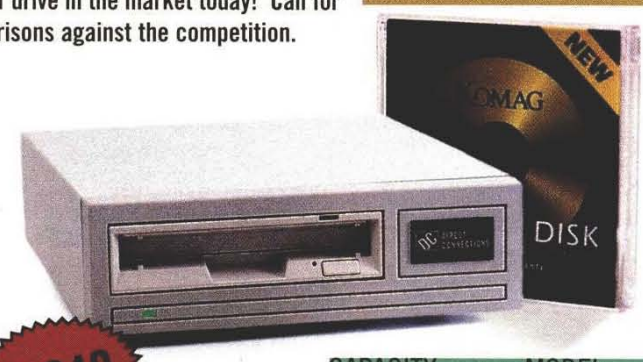
"Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." MacWorld April '95

- 2.0 GIG RAID Level 0. Perfect for highspeed requirements. — $ 2199
- This Array is the one to beat!! 4.0 GIG Barracuda 2 Wide Raid — $ 3599
- 6.0 GIG Fast and Wide Raid Fastest Raid for Video Vision Users — $ 4799

VideoVision Studio — $ 3649
Full screen and full motion recording and playback with JPEG hardware compression and decompression. radius

OPTICAL DRIVES

The New Sony 1.3GB half-height has 4MB of Cache and 3600rpm making this the fastest Optical drive in the market today! Call for comparisons against the competition.



$1949.

1 YEAR WARRANTY

ALL OPTICAL DRIVES INCLUDE CARTRIDGE, CABLING, AND SOFTWARE.

CAPACITY	MODEL	EXTERNAL
230MB	Fujitsu	$ 575
1.3GB	NEC	$ 1599
1.3GB	Sony 4MB cache	$ 1949
1.3GB	Ricoh Turbo	$ 2175
Sony's latest technology → 26GB	Sony Jukebox	$ 6395

TAPE BACK-UP

2 YEAR WARRANTY

We are the tape-backup Experts

With 2.5mb/sec sustained transfer, the DLT2000 is perfect for digital video or pre-press with large data files.

$3675.

All enclosures include one tape cartridge, cabling, and Retrospect software.

CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
1.3-2GIG	DC DAT	4MM	$ 709	$ 769
1.3-4GIG	DC DOUBLE DAT	4MM	$ 839	$ 899
1.3-8GIG	Conner 4326 DDS-2	4MM	$ 1089	$ 1149
4.0GIG	Sony 5200 DDS-2	4MM	$ 939	$ 999
4.0-8GIG	Sony 5000 DDS-2	4MM	$ 969	$ 1029
7.0-14GIG	Exabyte 8505XL	8MM	$ 2185	$ 2245
10-20GIG	QUANTUM DLT (DIGITAL LINEAR TAPE) INCREDIBLE 2.5MB/SEC TRANSFER RATE	1/2	$ 3575	$ 3675
-140GIG	Exabyte-10h Library	8MM		$ 4999

Save Your Work (And Your Money) On Spin Cartridges!

Introducing the tough, inexpensive SyQuest™ compatible cartridge from Spin.

Now there is a new, less expensive choice in removable media. Constructed of the strongest, most advanced materials available, Spin cartridges deliver unsurpassed reliability. Manufactured under license from SyQuest Technologies, each cartridge is completely compatible with your 44MB, 88MB, and 200MB 5.25" removable drives. To further insure your satisfaction, we offer the protection of a 30-day money back guarantee, an unconditional 6-year warranty, and toll-free technical support. Both the 44MB and 88MB cartridges are in stock and ready to ship overnight.

> **"All the cartridges are equally tough... When deciding among cartridges based on different technologies, examine your budget."**
>
> **- MacUser July, 1994**

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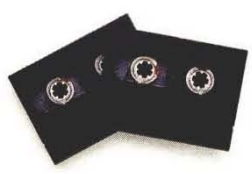

DAT

OPTICAL

SYQUEST

SPIN CARTRIDGES OFFER YOU:

- ✔ Unsurpassed Reliability
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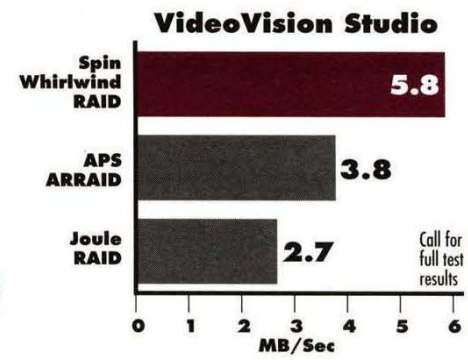
Whirlwinds are the optimum video professional storage solution.



Internal RAID

Our internal kit offers all of the advantages of RAID and can be conveniently mounted in the extra drive bay of your 800, 840AV, PowerMac 8100, or Workgroup Servers 80 and 8150. Dual fans keep the drives and your Mac cool. Internal arrays can be expanded with Whirlwind Fast & Wide drives through the Silicon Express IV external port.

CAPACITY	RAID 0,1	RAID 0,1,4,5
2GB	$2999	$3199
4GB	$3799	$3999

SyQuest Drives

Spin SyQuest™ 3.5" and 5.25" removable drives accommodate your expanding storage needs without slowing you down. The new 200MB and 270MB continue the SyQuest reputation for convenience and reliability at higher speed and capacity. Small, lightweight cartridges are easy to transport and store.

SyQuest 44MB		Cartridge	$43
SyQuest 44/88MB	$299	Cartridge	$48
SyQuest 200MB	$409	Cartridge	$75
SyQuest 105MB	$199	Cartridge	$56
SyQuest 270MB	$429	Cartridge	$65

MacUser RATED 4½ FEBRUARY 1995

4½ mice rating for our SyQuest 200 and 270!

Retrospect backup software included.

DAT Drives

Before disaster strikes, secure your valuable data with a Spin DAT drive. The low cost 3100 stores 2GB while the 3400 packs up to 8GB for remote backups and large audio, video and graphics files. All DAT drives include one tape cartridge and Retrospect™ for easy, complete backups.

Spin 3100 (DDS)	$799
Spin 3200 (DDS-DC)	$899
Spin 3400 (DDS-2)	$999

Whirlwind RAID

Whirlwind RAID is fast enough to handle all types of applications, even high-quality 30 fps video. In benchmark tests, our Fast & Wide arrays approach transfer rates of 9 megabytes per second, and will deliver better than 5.8 MB/sec performance when used with Radius VideoVision Studio™. Package includes ATTO SE IV, Remus software RAID controller, active terminator.

CAPACITY	RAID 0,1	RAID 0,1,4,5
2GB	$2999	$3199
4GB	$3799	$3999
8GB	$5399	$5599

QuickTape

Our new tape drive is the affordable backup storage solution. Easy to use and highly reliable, the Spin QuickTape will secure your valuable data faster than a 2GB DAT drive. Based on the new Tandberg mechanism, the drive can use 1GB QIC-Wide cartridges. Delivered with Cheyenne five-user backup software package and one cartridge.

QuickTape	$499	Cartridge	$19

Optical Drives

Spin's 3.5" Olympus 230MB is the affordable solution to securing your data while the 5.25" Maxoptix 1.3GB optical drives set the standard for speed and capacity. Great for backups, archiving, and as a secondary drive. The T4 comes with one cartridge, and for a limited time, the 230MB includes two free cartridges.

Olympus 230MB	$599	Cartridge	$39
Maxoptix T4 1.3GB	$1999	Cartridge	$85

$379!
Including Cartridge!

Bernoulli Drives

Continuing the Bernoulli tradition of rugged dependability, the Spin 230MB cartridge drive provides unlimited capacity with additional cartridges. Featuring DCR Active Termination and a one year warranty, the 230MB drive is backwards compatible with older cartridges. One cartridge included.

Bernoulli 230MB	$379	Cartridge	$89
		3-Pack	$199

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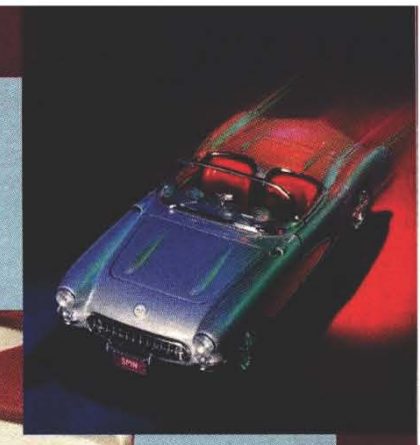
230 MO for just $599!

Two Cartridges Included!

Features ARCserve for Macintosh from CHEYENNE



230 Magneto-Optical

Featuring Cheyenne's ARCserve five-user backup software and two cartridges, the 3.5" Spin Olympus 230 Magneto-Optical is the premium solution for securing your data. Backup or archive your valuable Photoshop™, Quark XPress™, Excel™, Word™ and database files for years.

Olympus 230 $599 Cartridge $39

Including the Anubis Formatting utility by CharisMac Engineering, Inc.

Whirlwind

These Fast & Wide drives great for applications that require high speed storage, but not an array. Used with an ATTO Silicon Express IV, a Photoshop™ file rotates 65% faster than with a standard drive. The Whirlwind drives can also be added to our Fast & Wide arrays.

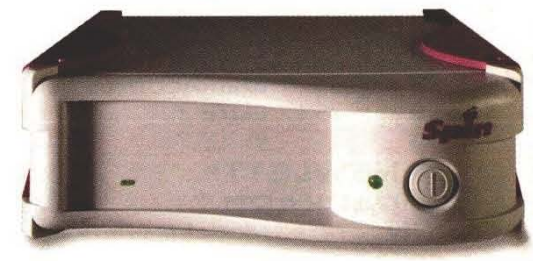
1GB Seagate Barracuda	$999
2GB Seagate Barracuda	$1399
4GB Quantum Atlas	$2199
ATTO SE IV with drive purchase	$895

PowerBook Drives

Spin 2.5" drives are fast, easy to install, and offer the capacity you need when you are on the road.

Quantum 170MB	$229
Quantum 256MB	$249
Quantum 341MB	$349
Quantum 514MB	$449

Quantum 840MB $269!



Hard Drives

Spin introduces the newest, most affordable mid-capacity solutions for your expanding storage needs. Available for both internal and external use, the Quantum Fireball and Trailblazer use the latest technical advancements to deliver accelerated throughput.

CAPACITY	INTERNAL	TORNADO
Q Trailblazer 420MB	$189	$289
Q Fireball 540MB	$219	$319
Q Trailblazer 840MB	$269	$369
Q Fireball 1.0GB	$379	$479
Spin 3105 1.0GB	$479	$579

High-Capacity, Low-Cost, Limited Time!

CAPACITY	INTERNAL	TORNADO
Seagate Hawk LP 2GB	$849	$949
Quantum Capella 2GB	$849	$949
Quantum Grand Prix 2GB	$899	$999
Quantum Grand Prix 4GB	$1399	$1499
Quantum Atlas 2GB	$999	$1099
Quantum Atlas 4GB	$1499	$1599

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4.0 GB	(3.5")	DT-3243		8.5 MS	7200	$1445	$1525
9.0 GB	(5.25")	DT-1991		11 MS	5400	$2359	$2459

MICROPOLIS AUDIO/VIDEO SERIES

Capacity		Model #		Seek	RPM	Internal	External
2.4 GB	(3.5")	DT-3221AV	LOW PROFILE	8 MS	7200	$1045	$1125
3.6 GB	(5.25")	DT-1936AV		11 MS	5400	$1250	$1350
4.0 GB	(3.5")	DT-3243AV		8.5 MS	7200	$1540	$1620
9.0 GB	(5.25")	DT-1991AV		11 MS	5400	$2485	$2585

Seagate — NEW LOW PRICING!!! — 5 YEAR WARRANTY

Capacity		Model #	Seek	RPM	Internal	External
1.2 GB	(3.5")	DT-31200	9 MS	5400	$565	$630
2.4 GB	(3.5")	DT-12400	9 MS	5400	$1050	$1130
2.4 GB	(3.5")	BARRACUDA 2	8 MS	7200	$1089	$1160
2.4 GB	(3.5")	BARRACUDA 2 WIDE	8 MS	7200	$1199	$1299
4.2 GB	(3.5")	BARRACUDA 4	8 MS	7200	$1489	$1569
4.2 GB	(3.5")	BARRACUDA 4 WIDE	8 MS	7200	$1610	$1710
3.5 GB	(5.25")	ELITE 3	10 MS	5400	$1979	$2079
9.0 GB	(5.25")	ELITE 9	11 MS	5400	$3099	$3150

HEWLETT® PACKARD — 5 YEAR WARRANTY

Capacity		Model #	Seek	RPM	Internal	External
1.2 GB	(3.5")	DT-C3323	10 MS	5400	$750	$810
2.4 GB	(3.5")	DT-C2490	8.5 MS	6400	$1199	$1299

Quantum™ — 2 YEAR WARRANTY

Capacity		Model #		Seek	RPM	Internal	External
365 MB	(3.5")	LPS365		11 MS	4500	$195	$265
540 MB	(3.5")	LPS540		10 MS	4500	$240	$300
730 MB	(3.5")	LPS730		11 MS	4500	$289	$369
1.0 GB	(3.5")	EM1080	5 YR. WARRANTY	9.5 MS	5400	$605	$665
2.1 GB	(3.5")	EM2100	5 YR. WARRANTY	9.5 MS	5400	$1045	$1105

IBM® — IBM QUALITY! — 5 YEAR WARRANTY

Capacity		Model #	Seek	RPM	Internal	External
1.2 GB	(3.5")	IBM0662	8 MS	5400	$620	$680
2.35GB	(3.5")	IBM0664	9 MS	5400	$1075	$1175
4.0 GB	(3.5")	IBM34320	8 MS	7200	$2200	$2300

All Drives are preformatted, tested and packaged with SCSI Manager 4.3 compatible drivers.
External includes choice of 25-50 or 50-50 pin cable. Same day shipping on available products.
Ask for information regarding ACTIVE TERMINATION.

SyQuest REMOVABLE

Capacity	Model #	Internal	External
44/88MB	SQ5110C	$305	$365
200 MB	SQ5200	$425	$485
270 MB	SQ3270	$425	$485

SYQUEST Drives include ANUBIS formatting software and 1 free cartridge - External packages include choice of 25-50 or 50-50 pin cables.

SYQUEST - MEDIA NEW LOW PRICING!

44 MB	$42	105 MB	$54
88 MB	$48	200 MB	$76
		270 MB	$64

CD ROM DRIVES

Make	Model #	Seek	External
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Toshiba CD ROM	DT-3401E	200MS	$395
Toshiba CD ROM	DT-3501E	200MS	$435

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Capacity	Model #	Format	External
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4-8GB	SONY 5000	DDS-2	$1199
4-8GB	HP 1533A	DDS-2	$1375
2-5GB	EXABYTE 8205	8MM	$1499
5-10GB	EXABYTE 8505	8MM	$2275

OPTICAL

Capacity	Model #	Seek	External
230MB	FUJITSU 230 OPTICAL	28MS	$850
1.3GB	HP C1716	23MS	$2299
1.3GB	MAXOPTIX TAHITI III	18MS	$2399

MEDIA

1 GB	$105	128 MB	$30
1.3 GB	$89	230 MB	$39

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Capacity	Model #	Seek Time	Trans. Rate	Price
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4.0GB	DT-32550AR	4.5MS	8MB per sec.	$CALL

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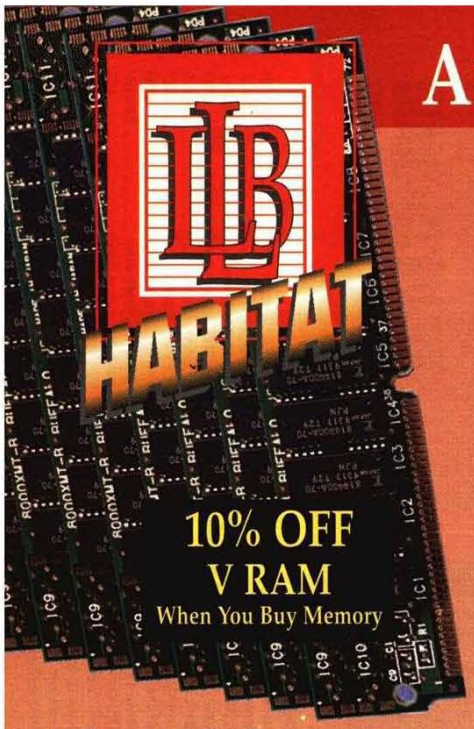

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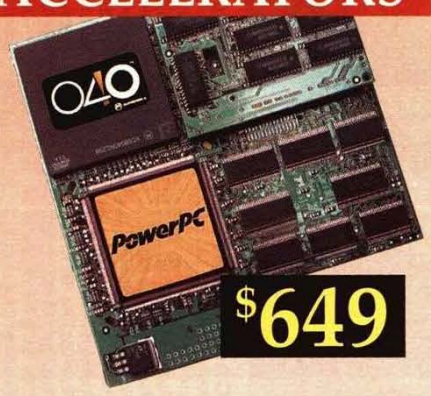

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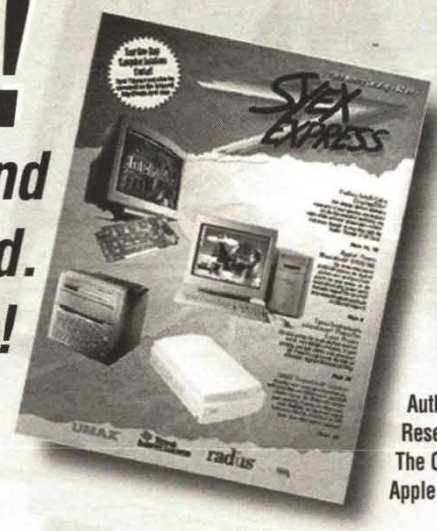

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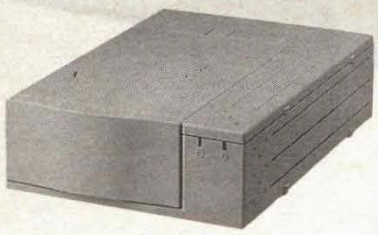

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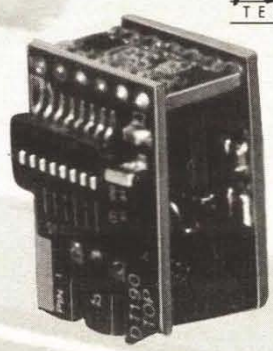

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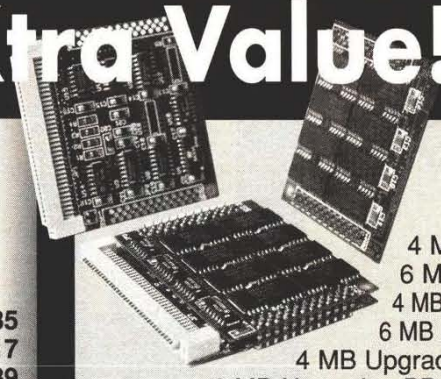

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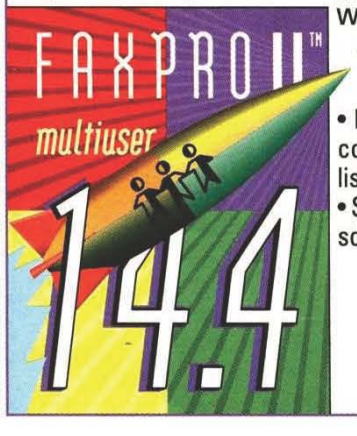

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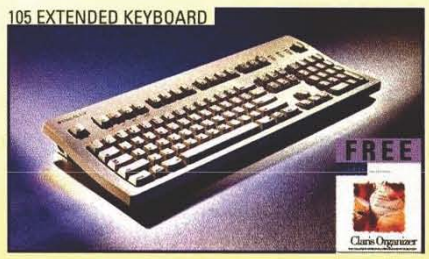

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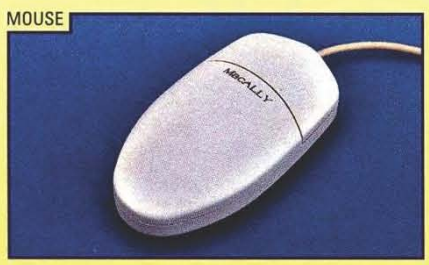

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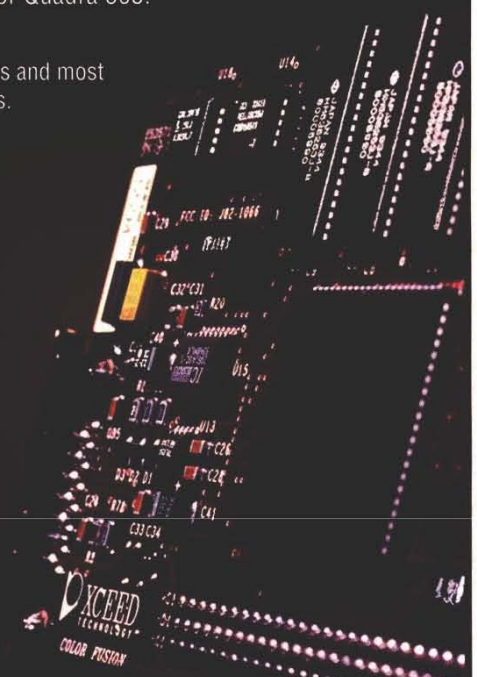

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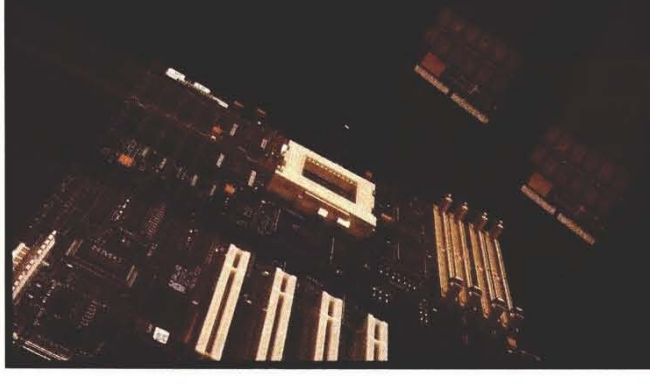

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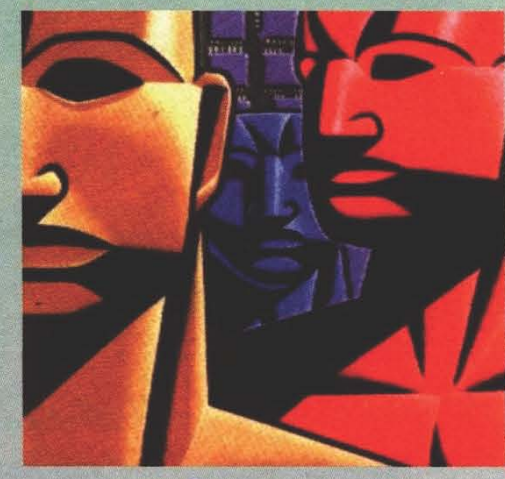

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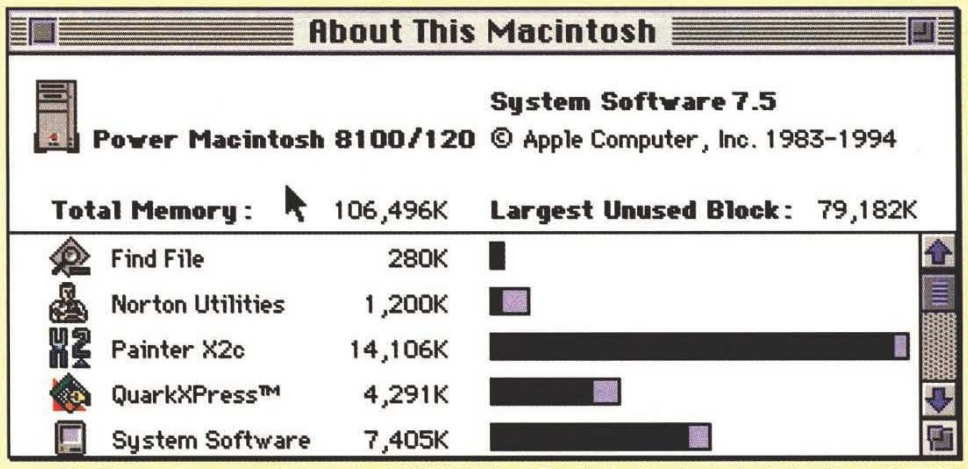

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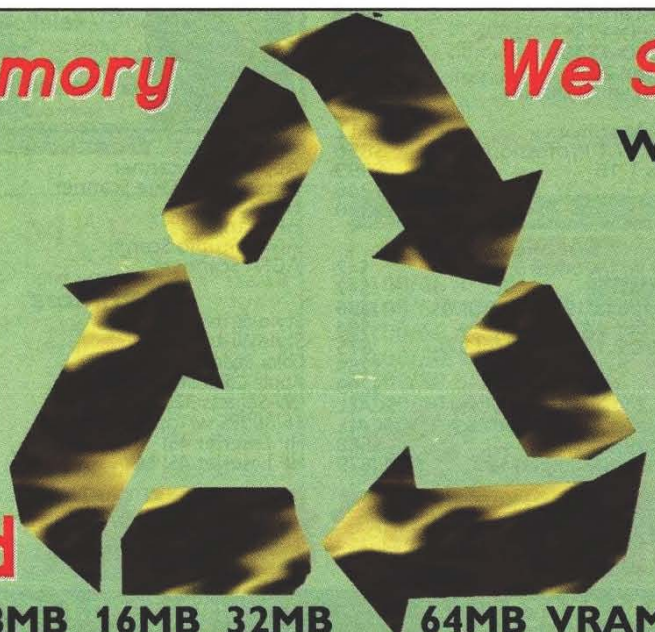

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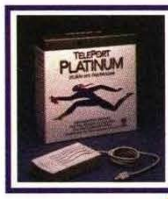

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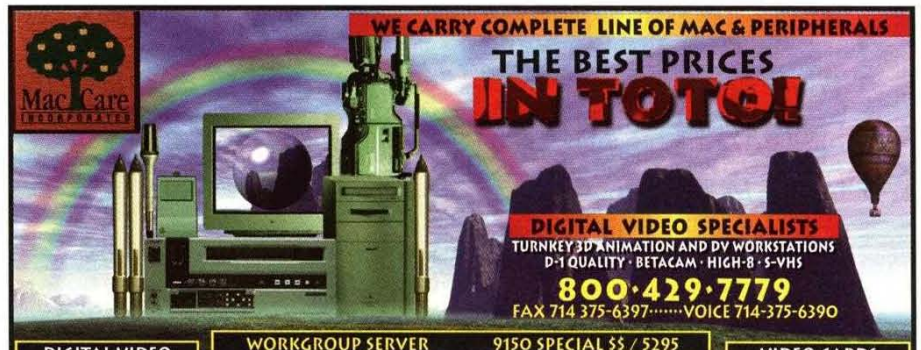
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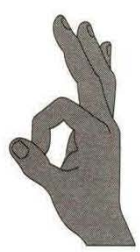

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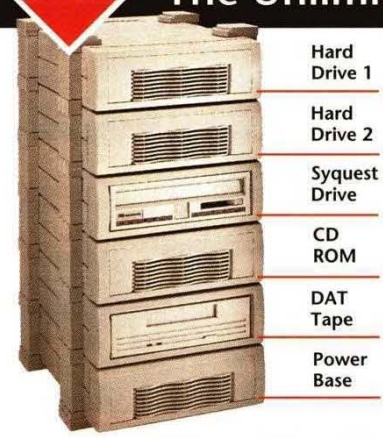

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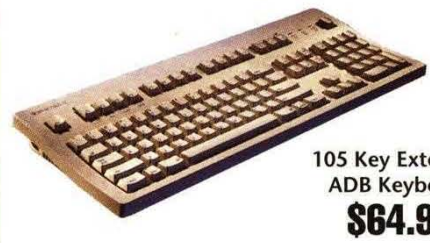

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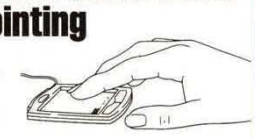

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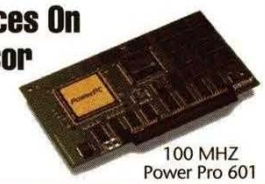

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270MB	10ms	$140	$200	$225
365MB	10ms	$155	$215	$240
540MB	10ms	$205	$265	$290
730MB	10ms	$235	$295	$320
1.0GB	10ms	$509	$569	$594
1.4GB	9.5ms	$659	$719	$744
2.1GB	9.5ms	$889	$949	$974
4.2GB	**9.5ms**	**$1459**	**$1519**	**$1544**

Western Digital	Speed	Internal	External	dsc
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Seagate	Speed	Internal	External	dsc
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2.4GB	Hawk 2, 9ms	$949	$1009	$1059
4.3GB	Hawk 4, 9ms	$1329	$1389	$1439
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ScanMaker III	1200 dpi flatbed	$2449
ScanMaker IIHR	**600 dpi flatbed**	**$828**
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NEC 17XE	17in, 25mm, 1280x1024	$979
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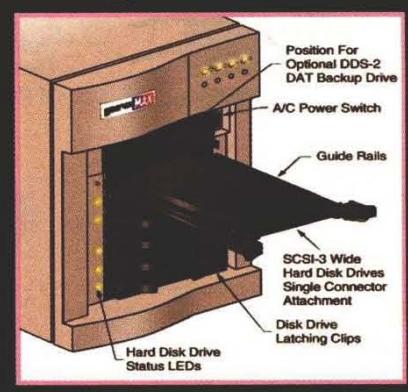
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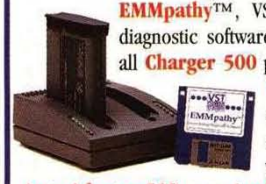

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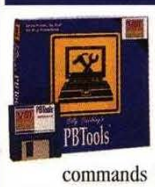

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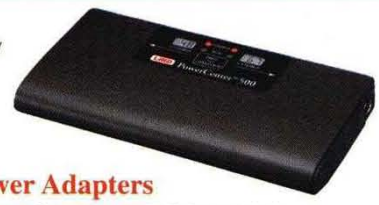

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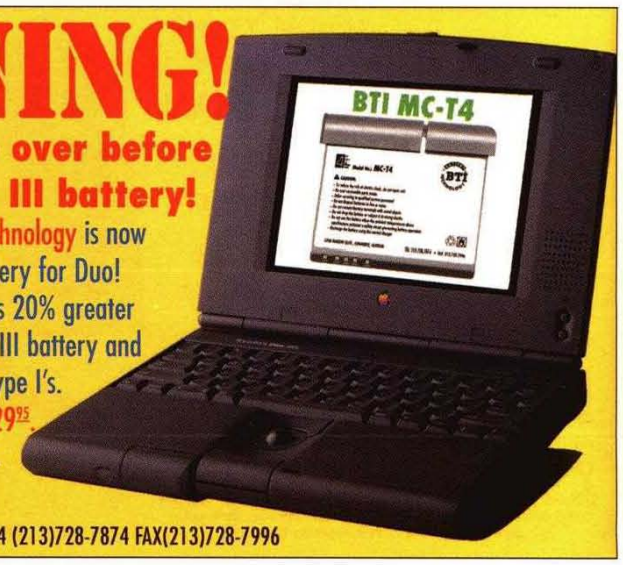

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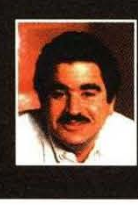

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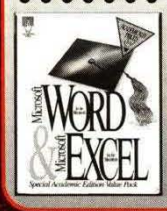

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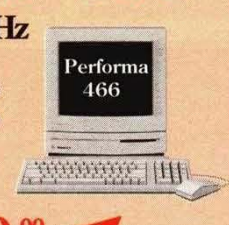

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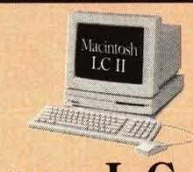

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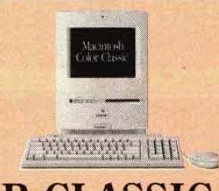

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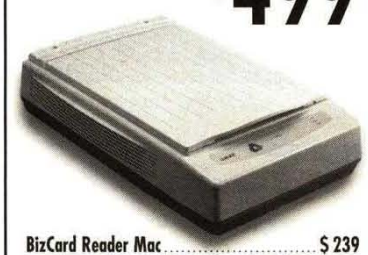

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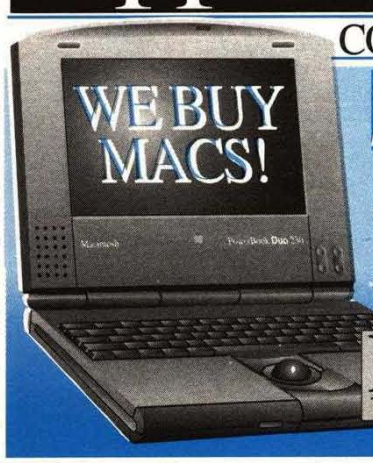

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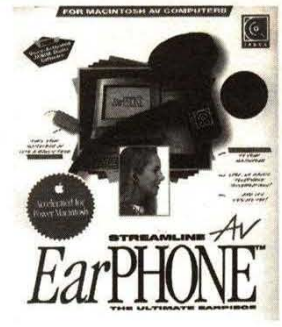

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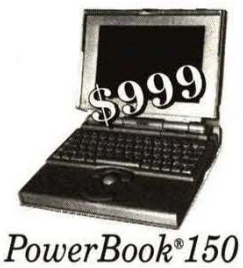

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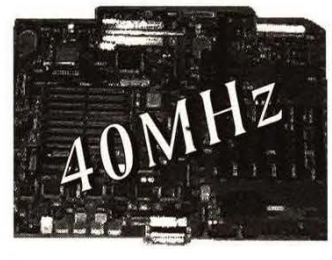

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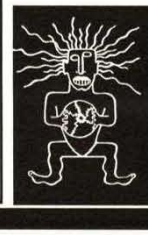

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Finder

From Page 1

Brian Lawley, Copland user-experience engineer.

Current programs that use the built-in Mac OS routines for standard interface elements will automatically inherit the new looks, Lawley said; although the visual interface is variable, the behavior never changes.

Once a user has defined a set of preferences, it will be possible to save them as a custom workspace. Separate workspaces can be created for each user sharing a single Mac, and it will be possible to switch rapidly among them without restarting. The new OS will also save settings that control which items will be visible to a user, such as the Trash icon or menu commands, and which extensions will be loaded.

When a Copland Mac starts up, it will optionally ask the user to select a user account and then enter a password. Apple said this log-in feature will communicate with PowerTalk's key chain to authenticate users with network services.

Apple said it will bundle several workspace themes with the Copland release. At least one of these will borrow features from Apple's At Ease, such as single-click buttons and default folders, to adapt the Mac to novices. Other themes will be designed to appeal to power users, children and Mac traditionalists.

Users will be able to add new themes by dragging a file onto the Mac OS folder, Copland's name for the System folder. Specific items in a theme, such as animation associated with a menu command, will be added through new drop-in extensions as well.

Behind the scenes, the Mac Toolbox is being rewritten and extended to include a number of on-screen controls that replace those that programmers currently write themselves, such as progress bars, tear-off menus and sliders. Apple said this will improve consistency throughout the OS and third-party applications.

The Copland Finder will offer a number of new elements. Drawers, also known as pop-up windows, will be windows that turn into large tabs when dragged to the bottom of the screen. Users will be able to open these drawers rapidly from within other programs without returning to the Finder. New spring-loaded folders will make navigation of the disk hierarchy easier by opening folders automatically when the user pauses above them in the middle of a drag operation. The Finder will also become Power Mac-native and multithreaded. Thus, it will be possible to work in the Finder while other actions, such as multiple file copies, take place.

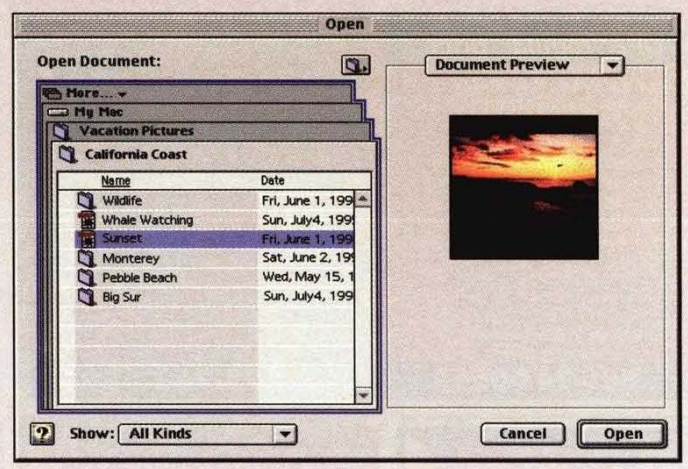
A dramatic new feature will be views, windows displaying only items that meet preset criteria. For example, a view window could show all applications stored across several disks, regardless of their actual locations. The non-hierarchical views will update themselves to always accurately reflect what is on the disks.

An enhanced Find command will be the mechanism for creating views and will also offer new search criteria. All text written to disk will be indexed on the fly by Copland, so it will be possible to perform extremely fast content searches from the Finder.

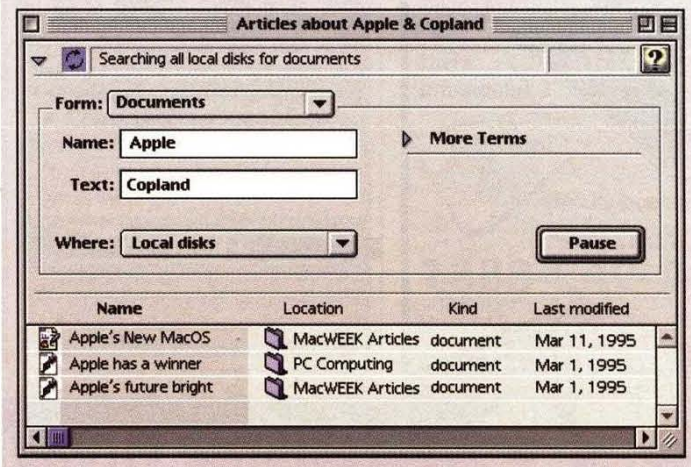
The often-criticized Open and Save dialog boxes will be totally revamped to make it more clear how their more-detailed file lists relate to the overall disk hierarchy. Also in the new dialogs will be a pop-up list of frequently accessed files and a dynamic set of display panes that can show other information, such as previews or Get Info contents.

The Apple Assistant feature, the successor to Apple Guide, will give the user the ability to set up Apple events-based tasks for the OS to do at regular intervals. These might include backing up a hard disk or analyzing the PowerTalk In Tray for specific types of mail. □

A Copland interface gallery



Copland's standard Open dialog box will use panes to show the current location in the folder hierarchy (left side) and information about the file selected (right side). The basic file listing will show more data about each file and can be narrowed by file type.



The enhanced Find will quickly scan through text within documents. Like all Finder operations in Copland, searches are multithreaded so they will operate simultaneously with other Finder tasks. The results of a Find can be saved as an automatically updating view.

Apple Assistant will include a set of common housekeeping chores that the computer can perform on its own. These Apple events-based tasks can be scripted by support staff or savvy users and are triggered by time or Finder events.

Denali

From Page 1

ers. Apple and IBM said the technology will be scalable from the workgroup to the enterprise.

The environment will integrate OpenDoc parts with a scripting language that echoes the syntax of Microsoft's Visual Basic. Nevertheless, "it is significantly different from Visual Basic," said Skip McGaughey, IBM market manager for object-oriented application development. "It will have a Visual Basic look and feel" but will be oriented toward the enterprise, he said.

According to the two companies, Denali will be able to import and run many Visual Basic applications, but some components will need to be changed. Visual Basic extensions (VBXes), which are available only on Intel-standard PCs, will not run under the Macintosh version. However, developers of future Mac-based OLE (Object Linking and Embedding) controls could convert them into OpenDoc parts, making them available within Denali. The companies said they hadn't decided if VBXes will run under the OS/2 version.

According to IBM, Denali is based on VisualAge and Bart, the company's earlier projects aimed at creating easier-to-use development environments.

Param Singh, product manager for Apple's solution tools, said Apple will provide a set of OpenDoc parts for Denali that will allow users to create custom applications; he stressed that there will be a market for third-party parts. Singh said Apple expects Denali to come with strong database-access capabilities, including hooks into the Open Database Connectivity middleware standard.

Although Denali will ship with a scripting language that resembles Visual Basic, programmers will eventually be able to work with any language compatible with the Open Scripting Architecture.

"An Apple-IBM alliance sounds very strong," said Jay Schauer, senior manager of MIS at Qualcomm Inc., a wireless-communications company in San Diego.

"My biggest concern is the lack of a good set of cross-platform tools," Schauer said. "Apple and IBM doing this makes me happy. It means I have to rethink my plans for the next two years." □

Nagel

From Page 1

major version of the Macintosh operating system more than a year before it ships "is not unique to us. We've seen others, most notably IBM [Corp.] and Microsoft, do things like this."

Previous product rollouts at Apple were tied to internal engineering schedules that Nagel said were based on the "time-honored tradition of alpha, beta and so on." With Copland, Nagel said he decided it was important to bring the entire development community as well as key user sites into the feedback process early.

He said Apple would provide developers releases this summer for those parts of Copland that "developers need longer lead times on," specifically the Finder, microkernel and graphical user interface.

In addition to debuting Copland well in advance of its probable ship date, Apple will step up its marketing efforts to bolster the Macintosh against the competition.

"We will try to be a lot more proactive and a lot louder, more aggressive on what I call positive FUD," Nagel said. "Microsoft creates a lot of FUD, which is frankly dishonest."

Observers can expect to see more direct comparisons between the Mac OS and competing products. "I'm always happy to get into a technology battle with [Microsoft]," Nagel said.

Nagel also said Apple's R&D efforts will be more focused, avoiding areas where third-party developers provide products. However, he said, "if it's germane to the success of the platform, we will want to control it. But if we can't add value to [a product], we shouldn't do it."

One product that adds value, Nagel said, is Apple's OpenDoc-based Internet browsing framework, code-named Cyberdog (see story, Page 1). "The concept is fantastic," Nagel said, "and I've got to really keep the pressure on the team to get it out."

Apple's licensing efforts continue to move forward, he said, including the appointment of new vice president Lamar Potts, who is responsible for all hardware and software licensing.

Although current Mac OS licensees will be able to deliver only variations on today's Power Mac themes, Nagel said, "Over the next couple months the emphasis, even with current licensees, will begin to shift toward the Common Hardware Reference Platform" (see story, Page 4). □

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Copland

From Page 1

As a result, Mac developers will be able to access limited forms of memory protection and pre-emptive multitasking, Apple and clone makers will gain an OS that can rest easily atop a variety of hardware designs, and the total system will become more than 95 percent native.

Technically, the big news in Copland will be the I/O systems. The software that performs the invisible work of moving data from peripherals or RAM into the PowerPC CPU and from there to screen or disk or network will be accelerated by up to 100 percent, according to Apple.

Key to this speed-up is a new driver architecture and microkernel that will underlie all graphics, LAN, storage and memory access. The new setup will be an especially big boon to clone makers. If a vendor wants to change the hardware — by adding Industry Standard Architecture (ISA) slots, for instance — it will have to add a new Copland driver, but the rest of the OS will not detect the differences between ISA and the built-in PCI (Peripheral Component Interconnect) bus. According to Apple, this hardware-abstraction layer will give clone vendors greater flexibility in system design and reduce testing requirements for software makers.

Copland will also open up two System 7.5 I/O bottlenecks: the File Manager, which will go native and allow disk sizes up to 256 terabytes, and the soon-to-be-released networking architecture called Open Transport, which will allow protocol independence.

Most of Copland, including drivers, will be written as a series of modules that can be selectively loaded into RAM. This change will reduce overall memory requirements for the OS, allowing it to run on 8-Mbyte machines, and will mean that Copland's speed will increase as RAM is added.

In addition, users will no longer have to deal with static memory partitions for applications. Software will be able to access additional RAM without relaunching, a capability that will stress the OS' virtual memory system like never before. To compensate, Copland will introduce a dramatically improved virtual-memory manager that is "much, much higher performance and much more efficient" than System 7.5's technology, Salvaggio said.

The microkernel and I/O tasks will run in protected memory and will be pre-emptively multitasked. However, the Mac Toolbox, which provides the OS' user interface routines; the Finder; and standard applications will all run together, multitasking cooperatively in an unprotected memory space as they do today.

New applications written specifically for Copland will be able to create protected processes that are pre-emptively multitasked at any of 32 levels of priority. These independent tasks will access the I/O subsystems directly but will not be able to use any Toolbox or QuickDraw routines to create user interfaces.

Apple said the benefits from these invisible, independent tasks will include potentially faster execution and protection from software errors. Even if the user crashes the Mac, only the unprotected portions of Copland will need to restart. The microkernel, I/O subsystems, extensions and protected processes will continue to run through the restart.

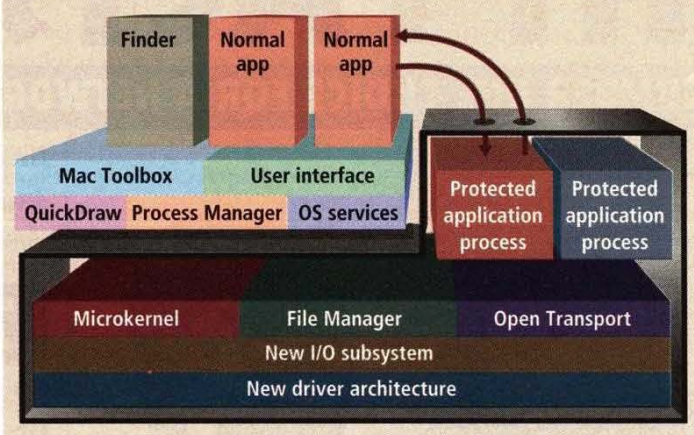
One side effect of this new protected-memory foundation is incompatibility with system extensions that "patch" the OS, Apple said. Copland will largely eliminate the method whereby software add-ons steal time from standard OS operations to perform background work, such as checking the network for mail or updating a menu-bar clock.

Removing the patching mechanism will mean that most extensions vendors have to rewrite their software, but it will also mean less compatibility testing for all developers. "We think it's going to reduce their development costs," Salvaggio said. Since extensions are also the root of many incompatibilities for users, their absence should make the Mac OS more stable, he added.

Several of today's operating system add-ons will become permanent fixtures in Copland. QuickDraw GX will be built in to the OS and will be faster and require less RAM. Apple's multimedia extensions QuickDraw 3D, QuickTime Conferencing and QuickTime VR will also be included, as will native PowerTalk and WorldScript.

Salvaggio said that delivering Copland for the current Power Macs and future PCI-based models was Apple's first priority. Subsequent releases for Common Hardware Reference Platform machines, due by mid-1996 at the earliest, and for older 680x0-based Macs were of secondary importance. □

Some protection: If you can see it, it can crash



The 95 percent native Copland OS will allow pre-emptively multitasked processes to run invisibly in protected memory. But the Finder, normal applications and the Mac Toolbox will be unprotected and will be cooperatively multitasked.

Cyberdog

From Page 1

in final form during the first quarter of 1996.

Ford said the company will provide OpenDoc parts that are clients for FTP, World-Wide Web, Gopher and e-mail. Cyberdog will also include viewers for common Internet file types, such as JPEG, GIF (Graphic Interchange Format), X-WAV (a Unix sound format) and AIFF (Audio Interchange File Format).

In addition, Apple is creating new kinds of OpenDoc parts to help users determine where they are in cyberspace and to store frequently accessed Internet resources. The company will also bundle a sample container application, currently called Internet Assistant, that binds all the parts together.

The new Log part will automatically track all the sites of any kind that a user accesses. Users will be able to view the Log contents alphabetically, by the order visited or by the type of site. Items from the Log can be dragged into the Personal Notebook part, which will save links to a user's preferred sites on the Internet and provide a two-level hierarchy in which to arrange them. From either the Log or the Notebook, users will be able to open a connection simply by double-clicking a site's icon.

Since the system is based on OpenDoc, Cyberdog's tools will be available from within any OpenDoc-compatible application. Apple said this will allow users to build custom interfaces to the Internet and integrate Internet-based resources into everyday documents.

For example, a teacher could create a ClarisWorks report about Shakespeare's sonnets and embed an active list that shows the latest messages in a Shakespeare newsgroup. The teacher could also drop in a button that would log on to an FTP site, grab audio files of poems being read and play them.

Users will be able to drag the icons for Internet locations out of the Log or Personal Notebook and onto the desktop, Apple said. So a sales representative could have a Finder icon that connects to the company's Web site and displays the latest price lists.

Because of Cyberdog's OpenDoc basis, users will be able to replace Apple's parts with third-party tools that add capabilities or support new protocols, such as VRML (Virtual Reality Modeling Language), Ford said.

Adam Engst, author of "The Internet Starter Kit for Macintosh" from Hayden Books, said Cyberdog may inspire the widespread developer support that OpenDoc needs to gain a market foothold. "Internet tools developers have taken to Apple's newest technologies faster than other product developers," he said. "In a sense, Cyberdog is OpenDoc's best chance."

The status of the e-mail component of Cyberdog is uncertain. With two mail technologies — PowerTalk and eWorld — already under its wings, sources said, Apple is reluctant to introduce a third mail technology. □

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Caere	8.75	-5.41
CE Software	2.72	-6.45
Diehl Graphsoft	4.88	0.00
General Magic	12.50	-6.54
Macromedia	34.38	5.36
Microsoft	81.38	-0.15
Novell	20.50	-7.87
Oracle	32.13	4.47
Saber	6.50	-5.45
Symantec	22.00	-5.38
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Maxtor	5.06	-1.22
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	05.11.95 CLOSE	WEEKLY % CHANGE
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NASDAQ	853.83	0.84

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Solutions examines **ARA servers and remote-access products** for mobile users.

MAY 29
Solutions compares **flat-file and relational databases.**

JUNE 5
This issue features a GA Extra on **multimedia production** and all the hardware needed. In Solutions, we'll cover enterprise **printers** that can provide up to 60 ppm.

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- Apple GeoPort Telecom Adapter kit
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ZiffNet/Mac This Week

Power Computing visits MacWEEK Forum
The clones are among us, and so are their creators. We're having some guests over from Mac clone vendor Power Computing, and they'll be joining us May 15 to 19 in the message section of ZiffNet/Mac's MacWEEK forum on CompuServe. This is also our Free Peek Week, which means the doors are open wide to every CompuServe member — you don't have to join ZiffNet/Mac to pay us a visit.

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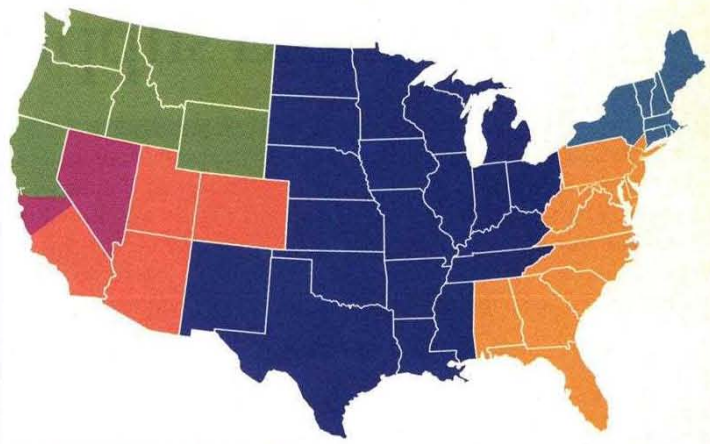

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Copland slipping into the future

Time has a way of slipping through your fingers, even when you're paying attention. It's as if the natural order includes a hidden trap door that you can never quite find until it's too late. Then boom, time is up.

The only exception to time's zero-tolerance rule is the mystery we call software development. That, as we now know, can seemingly last forever.

There was more than enough Copland on everyone's plate last week. At last we're getting a Mac OS we won't be ashamed to take home to meet Mom and Dad. But before you start shoveling files from your hard drive to make room for your new love, you should know that from many accounts it's going to be a while before you install that final version. The mid-1996 release date tossed about with such abandon lately is something short of realistic. For those whose track record on predicting delays is almost prescient, the beginning of 1997 is a better shipping guesstimate.

This piece of unpleasant news puts a bit of a damper on an otherwise enthusiastic developer community. By all accounts, developers are hot for the seriously cool things in Copland's bag of tricks. Therefore, the dream of establishing a Copland beachhead before Windows 95 becomes fully entrenched will not die quietly.

Tomorrow's clone

Software development calendar overruns are mere child's play compared to the excitement and drama that regularly surround the hardware cycle. For example, Motorola has admitted that it can't keep up with demand for the PowerPC 604 chip. Who knew that as part of its relationship with Apple, Motorola would be obligated to provide excuses for product delays for officially unannounced products.

You can bet that there will be some effort to provide clone makers with all the 604s they want when it's time to ramp up for 604-based products. With the arrival of PCI slots in the upcoming crop of Macs, the licensee crowd will have its first opportunity to differentiate its products by something other than price. Sources who know say that Power Computing is working on a prototype clone that includes both bus architectures. Apparently its engineers figure this is a more elegant way to ease the discomfort of changing buses than Apple's bulky NuBus expansion chassis solution.

On the less theoretical side, Radius is nearly ready to announce its 604 lineup. To the surprise of none and to the delight of some, two of those new models will be Photoshop workstations with a level of performance that should seriously dilute the allure of that dual Pentium box the Photoshop crowd has been eyeing lately.

Yesterday's clone

Dual Pentiums may roll off the tongue easily, but for those who prefer to consume computing power in less ostentatious portions, a simple DX4 solution will do. That's the basis of Reply Corp.'s decision to offer a 100-MHz DX4 version of its DOS Compatible card. The announcement, which is expected shortly, will highlight the fact that the DX4 card's BIOS will support both Windows and OS/2. Since cross-platform is more than a hyphenated adjective these days, that's a good thing.

Worked

Those Performa customers coping with the reality of ClarisWorks 3 manuals accompanying the ClarisWorks 2 installed on their new puppy understandably may not share others' interest in the news that Version 4 is in beta testing and is still looking trim despite having gained a lot of new features. □

Make the best use of the time you have by making the best use of the tip you just stumbled upon by turning it into a MacWEEK mug. The magic act begins at (415) 243-3544, fax (415) 243-3651, Internet (mac_the_knife@macweek.ziff.com), AppleLink (MacWEEK) or CompuServe/ZiffNet/Mac.

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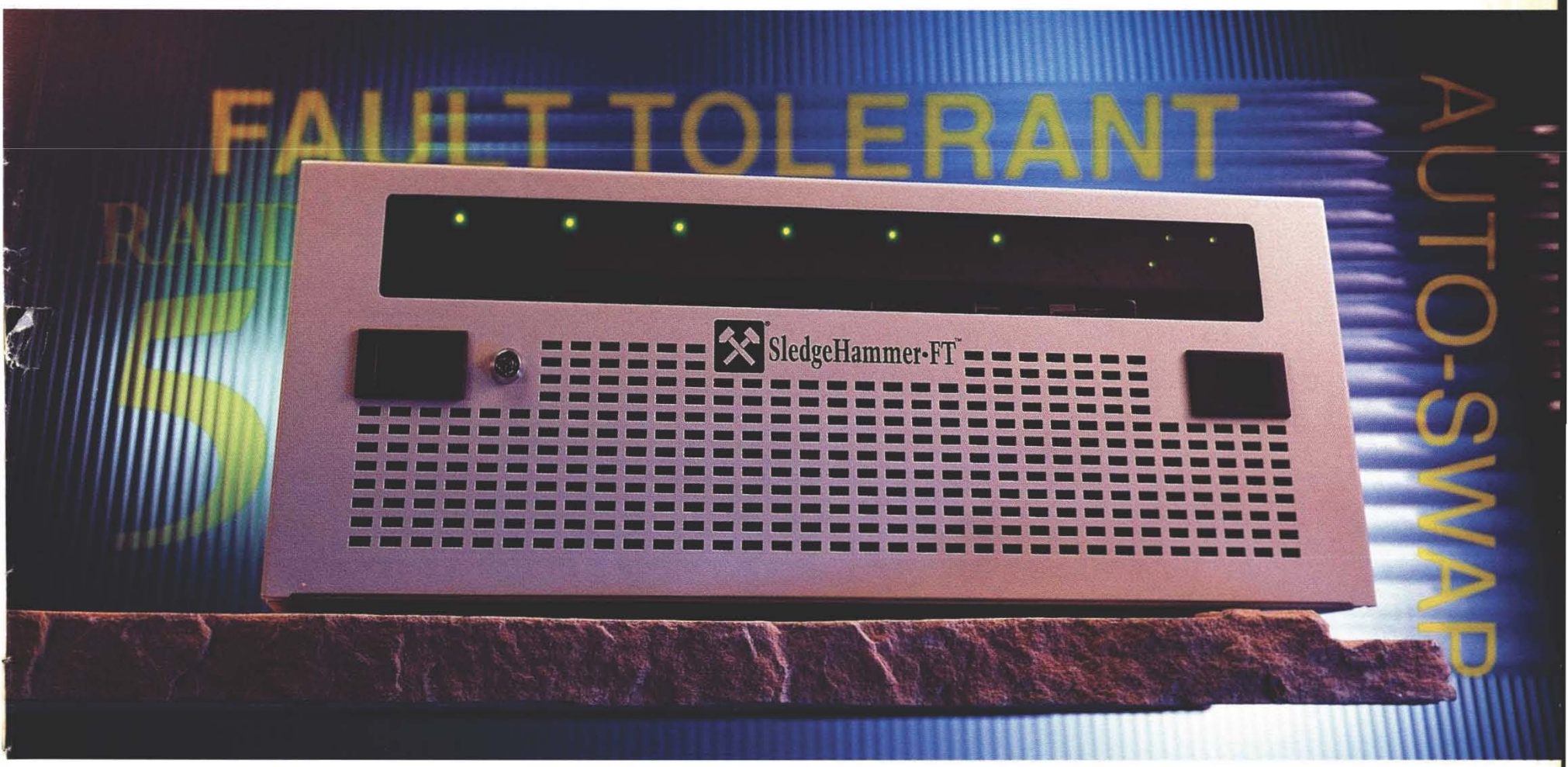

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Save Time

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